ATTACHMENT 9

CONTINGENCY PLAN

Deseret Chemical Depot CAIRA Plan incorporated by reference, current plan available on site.

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ACRONYMS

For purposes of this Contingency Plan, the following acronyms are used:

ACAICO	Assistant Chemical Accident/Incident Response and Assistance Plan
ACAMS	Automatic Continuous Air Monitoring System
ACS	Agent Collection System
AIC	Assistant Incident Commander
APR	Air Purifying Respirator
AQS	Agent Quantification System
Area 10	Chemical Surety Materiel Storage Area
ASC	Allowable Stack Concentration
BCS	Bulk Chemical Storage
BCHS	Bulk Container Handling System
BDS	Bulk Drain Station
BLAD	Blast Attenuation Duct
BP	Battery Pack
BRA	Brine Reduction Area
BRA PAS	Brine Reduction Area Pollution Abatement System
BTU	British Thermal Unit
CA	Combustion Air
CAICO	Chemical Accident/Incident Control Officer
CAIRA Plan	Chemical Accident/Incident Response and Assistance Plan
CAL	Chemical Assessment Laboratory
CAMDS	Chemical Agent Munitions Disposal System
CBR	Chemical, Biological, and Radiological
CDS	Central Decon Supply
CFR	Code of Federal Regulations
CHB	Container Handling Building
CHE	Cholinesterase
CON	Control Room
CSB	Communication Switch Building
CSEPP	Chemical Stockpile Emergency Preparedness Plan
DA	Department of the Army
DAAMS	Depot Area Air Monitoring System
DCD	Deseret Chemical Depot
Decon	Decontamination
DFS	Deactivation Furnace System
DPE	Demilitarization Protective Ensemble
ECF	Entry Control Facility
ECL	Engineering Control Limit
ECR	Explosive Containment Room
ECV	Explosive Containment Room Vestibule
EMT	Emergency Medical Technician
EOC	Emergency Operations Center
EOD	Explosive Ordnance Disposal
EP	Emergency Power
ERO	Emergency Response Organization
ERP	Emergency Response Plan
F	Fahrenheit

ACRONYMS

GB	Sarin, Isopropyl methylphosphonofluoridate
GC	Gas Chromatograph
GEN	Emergency Generator Supply
GLD	Gross Level Detector
H	Levinstein mustard, bis (2-chloroethyl) sulfide
HAL	Halon
HD	Distilled mustard, bis (2-chloroethyl) sulfide
HDC	Heated Discharge Conveyor
HEPA	High Efficiency Particulate Air
hr	Hour
HT	Mustard, 60% HD and 40% T
HTL	HAZMAT Team Leader
HVAC	Heating, Ventilation, and Air Conditioning
HYPU	Hydraulic Power Units
IAS	Instrument Air System
IC	Incident Commander
ICU	Intermittent Collection Unit
IDLH	Immediately Dangerous to Life and Health
IOC	Installation Operations Command
IR	Infrared Retro-Reflective
IRF	Initial Response Force
lb/hr	pounds per hour
LBSA	Lower Buffer Storage Area
LIC	Liquid Incinerator
LIC SRS	Liquid Incinerator Slag Removal System
LPG	Liquefied Petroleum Gas
LSS	Life Support System
MAT	Management Advisory Team
MCC	Mine Component Container
MCE	Maximum Credible Event
MCIC	Medical Clinician In Charge
MDB	Munitions Demilitarization Building
MDM	Multi-purpose Demilitarization Machine
MER	Mechanical Equipment Room
MET/DET	Meteorological/Detection Teams
MOU	Memoranda of Understanding
MPB	Munitions Processing Bay
MPF	Metal Parts Furnace
MPL	Multi-position Loader or Maximum Permissible Limit
MSB	Monitor Support Building
MSDS	Material Safety Data Sheets
NaOCl	Sodium Hypochlorite
NaOH	Sodium Hydroxide
NIOSH	National Institute for Occupational Safety and Health
ONC	On-site Container
OSIA	On-Site Inspection Agency
PAS	Pollution Abatement System

ACRONYMS

PDARS	Process Data Acquisition and Recording System

PDS	Personnel Decontamination Station
PHS	Projectile Handling System
PLA	Plant Air System
PLC	Programmable Logic Controller
PMB	Personnel Maintenance Building
PMCD	Program Manager for Chemical Demilitarization
PMD	Projectile/Mortar Disassembly Machine
POC	Point of Contact
POV	Privately Owned Vehicles
PPE	Personal Protective Equipment
PPM	Pick-and-Place Machine
PPS	Primary Power Supply
PRW	Process Water System
PSB	Personnel Support Building
PTL	Paramedic Team Leader
PUB	Process and Utility Building
QAS	PMCD Shift Quality Assurance Specialist
QRU	Quick Response Unit
RDS	Rocket Drain Station
RHA	Residue Handling Area
RHS	Rocket Handling System
RSM	Rocket Shear Machine
RTAP	Real Time Analysis Platform
RTL	Rescue Team Leader
SCBA	Self Contained Breathing Apparatus
SCO	Scene Control Officer
SDS	Spent Decontamination Solution or Spent Decontamination System
SGS	Steam Generation System
SPORT	Single Pallet Only Rocket Transporter
Spent Decon	Spent Decontamination Solution
SPS	Secondary Power Supply
SSCC	Site Security Control Center
T	Bis[2(2-chloroethylthio)ethyl]ether
TAP	Toxicological Agent Protective
TCB	Treaty Compliance Building
TEAD	Tooele Army Depot, Tooele (North Area)
TMA	Toxic Maintenance Area
TOCDF	Tooele Chemical Agent Disposal Facility
TOX	Toxic Cubicle
TWA	Time Weighted Average
UPMC	Upper Munitions Corridor
UPS	Un-interruptible Power Supply
UV	Ultraviolet/Infrared
VX	O-ethyl-S(2-diisopropylaminoethyl) methyl phosphonothiolate
XXX	3X; surface decontamination
XXXXX	5X; thermal treatment at 1000 °F for a minimum of 15 minutes
WTS	Water Treatment System

9.0 **CONTINGENCY PLAN [R315-3-2.5,R315-8-4]**

9.0.1 This Contingency Plan, provides for hazardous waste management and describes the actions facility personnel will take in response to fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents from their containment systems.

9.1 **GENERAL INFORMATION [R315-8-4.3, R315-8-4.4, andR315-8-3.7]**

9.1.1 **Facility Name & Location**

9.1.1.1 This Contingency Plan is for the Tooele Chemical Agent Disposal Facility (TOCDF) which is located on the Deseret Chemical Depot installation, located approximately 26 kilometers (16 miles) south of the City of Tooele, Utah.

9.1.2 **Operator**

9.1.2.1 The TOCDF is owned by the United States Army and is co-operated by the Program Manager for Chemical Demilitarization (PMCD) and EG&G Defense Materials, Inc.

9.1.3 **Site Plan**

9.1.3.1 DCD covers about 7,900 hectares (19,600 acres) and is located approximately 26 kilometers (16 miles) south of the City of Tooele, off State Highway 36 at latitude 40° 18' 00" North and longitude 112° 20' 00" West. DCD is located approximately 56 kilometers (35 miles) southwest of Salt Lake City, approximately 48 kilometers (30 miles) south of the Great Salt Lake, approximately 48 kilometers (30 miles) west of Utah Lake, and approximately 61 kilometers (38 miles) west of the city of Provo. Figure 9-1-1[1] shows the location of the DCD in the Rush Valley of Tooele County and its relation to the other towns, cities, and geographic landmarks in the area. The location of the TOCDF within the DCD installation boundaries is shown in Figure 9-1-2.

9.1.4 **Buildings/Structures**

9.1.4.1 Figure 9-1-3 shows all existing buildings, roads, and fences in the vicinity of the TOCDF. Major buildings/structures located inside the TOCDF security fence include the following: Container Handling Building (CHB); Entry Control Facility (ECF); Monitor Support Building (MSB); Treaty Compliance Building (TCB); Pollution Abatement System (PAS); Personnel Maintenance Building (PMB); Process and Utility Building (PUB); Various craft shops and supply warehouses; Brine Reduction Area (BRA); Brine Reduction Area Pollution Abatement System (BRA PAS); Residue Handling Area (RHA); Heating, Ventilation, Air Conditioning (HVAC) Filter; and Munitions Demilitarization Building (MDB).

9.1.4.2 Major components of the MDB include the following: Deactivation Furnace System (DFS); Metal Parts Furnace (MPF); Two Liquid Incinerators (LICs); Dunnage Incinerator and associated PAS (not used); Control Room; and Various disassembly and support

[1] All figures are located at the end of this attachment.

areas essential for processing the full range of the DCD's unitary stockpile of agents and munitions.

9.1.4.3 Major buildings/structures located outside the TOCDF security fence include the following: Chemical Assessment Laboratory (CAL); Communication Switch Building (CSB); Personnel Support Building (PSB); On-Site Inspection Agency (OSIA); and Warehouse Buildings S-7 and S-8.

9.2 DESCRIPTION OF DEMILITARIZATION EQUIPMENT

9.2.1 The TOCDF is designed to destroy toxic chemical agents and munitions through incineration. This process is called demilitarization. This section describes the flow of munitions and toxic chemical agents through the demilitarization processes in the TOCDF. The items to be demilitarized are listed in Table 9-2-1. The munitions and agents requiring demilitarization are located at the Chemical Surety Materiel Storage Area (Area 10) within the DCD. All chemical agents, munitions, and associated material will be thermally treated or decontaminated. Waste streams are handled in accordance with all applicable regulations.

Table 9-2-1
ORIGINAL STOCKPILE OF CHEMICAL WEAPONS TO BE DESTROYED AT TOCDF

Agent	Item	Quantity[2]	Pounds
HT-Blister	4.2" Mortars	62,590	363,020
HD-Blister	4.2" Mortars	976	5,860
	Ton Containers	6,398	11,383,420
H-Blister	155mm Projectiles	54,663	639,540
GB-Nerve	105mm Cartridges	119,400	194,620
	105mm Projectiles	679,303	1,107,260
	M55 Rockets	28,945	309,720
	155mm Projectiles	89,141	579,417
	MK-116 Bombs	888	308,140
	MC-1 Bombs	4,463	981,860
	Ton Containers	5,709	8,598,200
VX-Nerve	155mm Projectiles	53,216	319,300
	M23 Land Mines	22,690	238,240
	M55 Rockets	3,966	39,660
	M56 Rocket Warheads	3,560	35,600
	TMU-28 Spray Tanks	862	1,168,880
	Ton Containers	640	910,960

9.2.2 **Process Control System**

9.2.2.1 This section describes the overall process control systems for TOCDF. The munitions processing steps, which are specific to each munition type, are fully automated and are computer driven. Prior to processing a particular munition type, the software program and its identifier are entered into the control console in the Control Room.

[2] The Army's Chemical Stockpile Disposal Program began destroying the chemical stockpile at the TOCDF in August 1996. These numbers do not reflect chemical weapons destroyed since operations.

9.2.2.2 Interlocks are checked before starting and are continuously monitored during munitions processing by the program in the control system. Should any interlock fail, appropriate action is taken, such as immediate shutdown, programmed shutdown, or operator assisted shutdown. Two types of interlocks are used. If a shutdown interlock occurs, the system takes immediate action. If a permissive interlock occurs, the system allows completion of a process step but does not allow a new function to be initiated.

9.2.2.3 Following checkout of the specified munitions identifier program, munitions are delivered and unpacked. Munitions are placed into the process feed systems and demilitarization operations are begun.

9.2.2.4 Once initialized and started, the system operates automatically without intervention of the operator, unless an abnormal condition arises. Sequencing of operations is controlled automatically, based on munition feed into the system from the Unpack Area (UPA) and completion of operations by the machines. In monitoring critical functions, the control system issues advanced warning of alarms indicating that an alarm condition is developing so that the operator may take corrective action.

9.2.2.5 The presence of a munition at locations throughout the process is displayed on the graphic displays. In addition, the number of munitions into and out of the processing areas is totaled and the total is displayed on the graphic displays. Crosschecks are made to determine discrepancies in these counts. The total number of munitions processed is determined and recorded.

9.2.2.6 Each programmed step is continuously monitored for completion. If the system fails to complete a required step within a specified period of time, the system halts that step and halts all process steps "upstream" of that function. The halt continues until a continuation signal is given either by the operator or by the eventual completion of the function that caused the halt. When a halt occurs, the operator is informed in the Control Room. The operator has three choices: (1) initiate the function again through the keyboard, and if successful, continue the process; (2) visually inspect by means of the closed circuit television or to observe the machine itself to determine whether the function actually occurred and, if it actually occurred, to continue operation by an entry into the keyboard; or (3) halt further processing by entering a halt command through the keyboard.

9.2.2.7 A data acquisition and recording system is provided for acquiring operational data for analysis and historical record keeping. Data concerning measurements, sequence of operations, total munitions processed, process alarms, environmental data, agent levels and alarms, equipment run times, and records of Exclusion Area entries wear time are acquired for generation of daily, weekly, and monthly reports. Reports generated and printed include production totals, alarm shutdown summaries, Automatic Continuous Air Monitoring System (ACAMS) alarms, preventive maintenance, filter operations, environmental reports, utilities status, Level A wearer records, and sequential events. In addition, selected data on alarms and operations are collected on tape for historical data.

9.2.2.8 Maintenance panels will be located with the equipment to allow maintenance personnel to operate the equipment locally. A hand-held pendant control unit is attached to the local panel to allow the maintenance personnel to operate the equipment. When the switch on the local panel is in the LOCAL position, control from the central process controller will be locked out, except for emergency stops. When the switch is in the REMOTE position, the system can only be controlled from the central process controller. A hardwire backup system will be used to handle critical functions in extraordinary situations.

9.2.3 **M55 Rockets - Process Overview**[3]

9.2.3.1 The Rocket Handling System (RHS) is designed to prepare GB and VX M55 rockets for demilitarization. Rockets are demilitarized by first removing the agent in the rocket cavity, shearing the rocket body into pieces, and then destroying the rocket body in the Deactivation Furnace System (DFS). The drained agent is collected in the Agent Collection System (ACS) before being fed to the LICs.

9.2.3.2 Rocket Handling System (RHS)

9.2.3.2.1 The RHS consists of two parallel process lines, A and B. Each line consists of a rocket metering machine, input conveyor system, Rocket Drain Station (RDS), and Rocket Shear Machine (RSM).

9.2.3.3 Rocket Preprocessing

9.2.3.3.1 Rockets will be shipped from Area 10 to the CHB[4] in On-site Containers (ONCs)[5]. Each ONC holds up to two pallets of rockets, 15 rockets per pallet. The rockets remain in the shipping/firing tubes throughout the demilitarization process. Upon arrival in the CHB, the ability of the ONC to contain vapors is checked (i.e., seal tested for leaks). If the ONC passes the seal test, the ONC is either stored on one of the storage conveyors in the CHB or sent upstairs to the UPA for unloading. If the ONC fails the seal test the ONC is moved to the UPA to be unloaded on a priority basis.

9.2.3.3.2 Before unloading, the ONC is monitored via ACAMS for leaking munitions. If the ONC is found to be less than or equal to 40 TWA (Time Weighted Average), the rockets are unloaded in the UPA. If the ONC is found to be greater than 40 TWA and has passed the seal test, the ONC is sent to the TMA to be unpacked by personnel wearing Level A. If the ONC is monitored at greater than 40 TWA and has failed the seal test, the rockets are unpacked in the UPA by personnel wearing the proper Personal Protective Equipment (PPE).

9.2.3.4 Rocket Processing

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[3] Refer to Drawing EG-00-M-0004 for an isometric depiction of rocket processing.

[4] The CHB has a storage capacity of 48 ONCs.

[5] ONCs are vapor-tight, crash-resistant, fire-resistant containers used for transporting munitions by specialized truck from Area 10 storage igloos to the CHB or Toxic Maintenance Area (TMA for leakers and overpacks) of the MDB.

9.2.3.4.1 Rockets are loaded into the system through the rocket metering assembly, one at a time. Once in the airlock assembly, the rocket is transported through the Explosive Containment Room Vestibule (ECV) and into the Explosive Containment Room (ECR) for processing. First the rocket is drained at the RDS, which punches the rocket with two holes and a vent punch and drains the agent to the Agent Quantification System (AQS) tank to verify the agent drained. The agent is then sent to the ACS to be incinerated in the LICs. The rocket is then rotated, to prevent residual agent from dripping onto the floor, and sent to the RSM to be sheared into pieces. The first cut separates the fuse (the explosive-initiating component) from the rest of the body (the explosive and propellant components) to avoid an explosive combination in the DFS. The pieces are sheared by water or decon solution cooled shear blade to prevent ignition of the rocket energetics by the hot shear blade. The pieces are then fed to the DFS.

9.2.3.5 Rocket Processing - Leaking Rocket Campaign

9.2.3.5.1 Leaking rockets that were previously determined to be leaking at Area 10 are overpacked in the igloos. The rockets are shipped in their overpacks, in the ONCs, to the CHB. The ONCs are transported to the UPA, where they are monitored for agent. If the ONC is less than or equal to 40 TWA, the rockets, in their overpacks, are unloaded in the UPA and transported into the ECV for unloading. If the ONC is greater than 40 TWA and the ONC has a good seal, the ONC is transported to the TMA where it is unloaded by Level A clad personnel. The ONC is decontaminated (XXX decontamination) and returned to the CHB for reuse.

9.2.4 **M23 Land Mines - Process Overview**

9.2.4.1 Mines will be delivered to the UPA in ONCs. Each ONC may contain up to twelve mine drums. Each mine drum may contain a maximum of three mines, three fuzes, and three activators. The fuzes and activators are not part of the mine assembly and are packed within different compartments within the mine drum. The ONCs will be monitored and unpacked. Any sealed[6] ONCs determined to have agent levels greater than 40 TWA will be unpacked in the TMA. However, during routine operations, the mine drums will be unloaded from the ONCs in the UPA and either placed on the bypass conveyor and transferred into the ECV for unpacking or stored on secondary containment pallets in the UPA. Prior to transferring the mine drums into the ECV, the vapor space of each mine drum may be monitored for the presence of agent using a Mine Drum Monitoring Device (MDMD). Any drums identified to contain agent vapor will be conservatively processed as containing "known leakers" and the MDMD will remain on the drum throughout the drum's MPF processing.

9.2.4.2 Mine drums with known leakers are transferred to the ECR for unpacking by personnel wearing the appropriate level of PPE. The same is true for any leakers identified during routine processing in the ECV. If a leaker is found during routine processing in the ECV, the mines, fuzes, activators, packing material, and, as necessary, contaminated PPE (e.g. gloves) will be placed back into the drum in question and the drum will be transferred into the ECR for unpacking. The mines, fuzes, and activators will be processed as described below except the ECV conveyor operations will be bypassed.

[6] The requirements for overpacks that fail the seal test are described in Permit Condition III.G.4.

9.2.4.3 During routine processing in the ECV, three mines, three fuzes, three activators, and packing material are removed from each drum. The fuzes and activators are loaded into Mine Component Containers (MCCs). The MCCs are cardboard carriers, shaped like mines, which are used to transfer fuzes and activators through the Mine Machine and to the DFS. The mines and MCCs are placed on the Rocket/Mine Input Conveyor No. 2 (MMS-CNVM-104) located in the ECV.

9.2.4.4 This conveyor (MMS-CNVM-104) uses a metering system to transport mines and MCCs through blast gates into ECR B and onto the Mine Machine Feed Conveyor. This conveyor uses a second metering system to meter mines and MCCs to the Mine Machine. A MCC verification cylinder verifies the type of item, mine or MCC, before the second metering system allows transport to the Orientation Station of the Mine Machine.

9.2.4.5 If the item is determined to be an MCC, the yoke rotary actuator will rotate approximately 180 degrees placing the MCC onto the trolley for subsequent feed to the DFS, bypassing the punch and drain operation.

9.2.4.6 If the item is a mine, it moves into the yoke of the orientation station. The mine is rotated about 90 degrees to a vertical position and clamped in place. The mine is punched and the agent is drained to the Agent Quantification System (AQS) and then to the ACS tanks. The amount of agent that will be drained from each mine is equal to or greater than 95% of the nominal fill. In the event that the AQS System fails to remove 95% of the agent from a mine, an alarm will sound and the CON advisor screen will indicate an insufficient drain condition.

9.2.4.7 After the mine has been punched and drained, it is rotated further about 90 degrees to the horizontal position and placed upside down on the trolley. The trolley moves the mine into position in the Fuze Well Assembly Removal Station (FARS). (Note: the MCCs pass unchanged through the FARS). The fuze well assembly is unscrewed from the bottom of the mine. The trolley then pushes the mine and the fuze well assembly onto the DFS feed chute gate.

9.2.4.8 The mine body, mine components, activators, fuzes and MCCs are all processed in the DFS.

9.2.5 **Projectiles and Mortars - Process Overview**[7]

9.2.5.1 The Projectile Handling System (PHS) is designed to prepare 105-mm projectiles, 155-mm projectiles, and 4.2-inch mortars for demilitarization. The munitions are demilitarized by removing the explosive components and the chemical agent contained in the munition body. The munition bodies are thermally treated in the Metal Parts Furnace (MPF). The explosive components (consisting of fuzes, boosters, bursters, and/or supplemental charges) are destroyed in the DFS, and the chemical agent is collected in the ACS before being incinerated in the Liquid Incinerators (LICs).

9.2.5.2 Projectile Handling System (PHS)

[7] Refer to Drawing EG-00-M-0003 for an isometric depiction of projectile/mortar processing.

9.2.5.2.1 The PHS consists of two parallel process lines, A and B. The removal of the explosive components and the draining of the chemical agent is done in two stages. The first stage consists of disassembling the munitions on the Projectile/Mortar Disassembly Machine (PMD) in the ECRs. The second stage consists of draining the munitions via the Multipurpose Demilitarization Machines (MDMs) in the Munitions Processing Bay (MPB). The PHS consists of a series of conveyors, PMDs, MDMs, and robots for handling of the munitions. For non-burstered projectiles, the UPA operator removes the nose plug in the UPA and loads the munitions onto trays, which are transferred (bypassing the PMDs) to the MDMs for processing.

9.2.5.3 Projectile/Mortar Preprocessing

9.2.5.3.1 Projectiles/mortars will be shipped from Area 10 to the CHB in ONCs. Upon arrival in the CHB the ability of the ONC to contain vapors is checked (i.e., seal tested for leaks). If the ONC passes the seal test, the ONC is either stored on one of the storage conveyors in the CHB or sent upstairs to the UPA for unloading. If the ONC fails the seal test, the ONC is moved to the UPA to be unloaded on a priority basis. Before unloading, the ONC is monitored via ACAMS for leaking munitions. If the ONC is found to be less than or equal to 40 TWA, the projectiles/mortars are unloaded in the UPA. If the ONC is found to be greater than 40 TWA and has passed the seal test, the ONC is sent to the TMA to be unpacked by personnel wearing Level A. If the ONC is monitored at greater than 40 TWA and has failed the seal test, the projectiles/mortars are unpacked in the UPA by personnel wearing the appropriate PPE. The pallets are transported to the ECV by conveyor system. In the ECV, they are loaded onto the conveyor, one at a time, by personnel wearing the appropriate PPE.

9.2.5.4 Projectile/Mortar Processing

9.2.5.4.1 The projectile/mortar feed conveyor discharges the munitions into the ECV where they are transported to the ECR to be processed on the PMD (munitions that do not contain a burster are sent directly into the MPB from the UPA, bypassing the ECRs). The PMD removes the nose closures, booster, burster, and other miscellaneous energetic parts. The bursters (except for 4.2 inch mortar bursters) are sheared at the Burster Size Reduction (BSR), which is the RSM retrofitted for burster processing. The energetic components are fed to the DFS.

9.2.5.4.2 The munitions are transferred out of the ECR and placed on a tray in the Upper Munitions Corridor (UPMC) by the Multi-position Loader (MPL). The tray is then transferred to the MPB to continue processing on the MDMs.

9.2.5.4.3 The munitions are loaded into the MDM by the Pick-and-Place Machine (PPM) where the burster well is removed and the agent is drained. After the agent is drained from the munition, the burster wells are crimped and reinserted into the munition or, for some munition types, they are dropped into the burster well chute and then collected in a tray which is fed to the MPF. Crimping the burster well deforms it so it will no longer seat and provide a gap for a more thorough thermal combustion of the agent heel in the MPF.

9.2.5.4.4 The drained munitions are then loaded back into the tray and transported to the MPF for thermal decontamination of the munition bodies. Any items that cannot be fully

processed by the MDM are set aside by the MPL into a reject table for individual evaluation before being fed to the MPF.

9.2.6 **Bulk Item (Ton Containers,[8] Bombs,[9] and Spray Tanks[10]) - Process Overview**

9.2.6.1 The Bulk Container Handling System (BCHS) is designed to safely drain chemical agent from bulk items such as ton containers, bombs, and spray tanks. Following the removal of the chemical agent, the munition casing or container is thermally treated in the MPF. The chemical agent is collected in the ACS before being fed to the LICs.

9.2.6.2 BCHS Process Overview

9.2.6.2.1 The BCHS consists of two parallel lines, A and B. Line B equipment is sized larger for processing spray tanks. The BCHS consists of the airlock assemblies, conveyor systems, and the Bulk Drain Stations (BDS).

9.2.6.3 Bulk Item Preprocessing

9.2.6.3.1 Bulk items are stored in Area 10 and are transported to the CHB in different containers depending on the type of munition. Ton containers are placed on pallets and shipped in an ONC, two ton containers per ONC. Spray tanks and MK-116 bombs are individually stored in their own shipping containers (overpacks) and are transported in these overpacks. Upon arrival to the CHB, the ability of the overpack (i.e., ONC, shipping container) to contain vapors is checked (i.e. seal tested for leaks). If the overpack passes the seal test the bulk items are either stored or transported to the UPA for unloading. If the overpack fails the seal test, it is sent to the UPA to be unloaded on a priority basis. Before unloading, the overpacks are monitored, via ACAMS, for leaking munitions. If the overpacks are less than or equal to 40 TWA they are unloaded in the UPA. If the overpacks are greater than 40 TWA and have passed the seal test, the bulk items are transported to the TMA for unloading by personnel wearing Level A. If the overpacks are greater than 40 TWA and have failed the seal test, the bulk items are unpacked in the UPA by personnel wearing the appropriate PPE.

9.2.6.4 BDS Processing

9.2.6.4.1 The bulk items are loaded onto the bypass lines (bypass line B for spray tanks) and either stored in the UPMC or transported directly to the BDS in the MPB. At the BDS the bulk item is punched. The item is then weighed for a beginning weight. After a beginning weight is established, the chemical agent is drained from the cavity of the bulk item or container. The bulk item is then re-weighed for an end weight and transported to the Lower Buffer Storage Area (LBSA) and subsequently to the MPF for thermal decontamination.

9.3 **DESCRIPTION OF INCINERATION/FURNACE SYSTEMS**

[8] Refer to Drawing EG-00-M-0006 for an isometric depiction of ton container processing.

[9] Refer to Drawing EG-00-M-0001 for an isometric depiction of bomb processing.

[10] Refer to Drawing EG-00-M-0005 for an isometric depiction of spray tank processing.

9.3.1 **Incineration - General**

9.3.1.1 Three types of incinerators are used to deactivate and detoxify the components of the waste: the LICs, the MPF, and the DFS. Only the DFS and the two LICs are needed to process rockets and mines. The processing of bombs, spray tanks, and ton containers does not require use of the DFS because they do not contain any explosives or propellants. The processing of projectiles, cartridges, mortars, and leaking mines may require the use of all three types of incinerators. Agent is drained from munitions/containers and collected in tanks. Spent decontamination solution is collected and pumped into tanks. During operation, agent is pumped and spent decontamination solution may be pumped to the two LICs. The GB sodium hydroxide-based spent decontamination solution may be shipped off site for treatment if the requirements of Attachment 2 (Waste Analysis Plan) are met. Explosives and propellants are designed to be fed to the DFS. Metal parts are fed to the MPF in batches on a timed cycle, depending on the particular munition being processed.

9.3.1.2 During waste feed, the PASs for the incinerators operate continuously. Brine is transferred to the Brine Reduction Area (BRA) from the PASs for the LICs, MPF, and the DFS. Brines are accumulated in four tanks in the BRA or in tankers for off-site disposal.

9.3.1.3 Slag residue from the secondary chamber of the LICs is removed when an excessive amount has accumulated at the base of the chambers. Ash from the DFS is removed continuously when in use. Metal parts from the MPF are removed on a timed cycle. Salts are removed continuously from the brine dryers. All of the solid residuals are collected in containers and held at the facility prior to disposal at an approved off-site hazardous waste facility.

9.3.2 **Process Overview - Liquid Incinerator (LIC)**

9.3.2.1 There are two identical Liquid Incinerators (LICs), identified as LIC 1 and LIC 2. Each LIC consists of a primary chamber, a secondary chamber, a primary combustion air (CA) blower, a secondary CA blower, and associated sensors and piping. Each LIC is capable of burning liquid agent (GB, VX, mustard) and spent decon supplied to it from the Toxic Cubicle (TOX). Liquid agent is pumped from the TOX to the LIC primary chamber where it is burned with fuel gas and combustion air at a temperature specified by the LIC D-tables in Attachment 19 (Instrumentation and Waste Feed Cut-Off Tables). Furnace draft is supplied by the LIC Induced Draft (ID) Fan, which is part of the LIC PAS. Exhaust gases are pulled by the ID fan from the LIC primary chamber to the LIC secondary chamber where spent decon from the TOX is burned with fuel gas and combustion air at a temperature specified in the LIC D-tables. The resulting combustion products flow to the PAS for scrubbing before being released to the atmosphere. The resulting slag falls to the bottom of the secondary chamber and is removed periodically by the LIC Slag Removal System (LIC SRS).

9.3.2.2 LIC Primary Chamber

9.3.2.2.1 The LIC primary chamber is a refractory-lined steel cylinder set on one end with a flattened dome top. A low-velocity burner, mounted in the lower wall of the chamber,

introduces combustion air, fuel gas, atomizing air, liquid agent, diesel fuel purge flow, and purge air into the chamber. A pressure controller at the LIC PAS ID Fan maintains the LIC primary chamber at about five inches of water column more negative than the LIC primary chamber room by sensing the chamber and room pressure to modulate a damper at the ID fan inlet. Thermocouples in the primary chamber exhaust duct monitor the exhaust gas temperature and maintain it at the set-point by modulating the fuel gas supplied to the burner. Agent is supplied to the LIC primary chamber from the TOX. Agent flow is measured by duplicate mass flow meters. The LIC primary CA blower in the primary chamber room supplies room air through a vertical blower inlet duct to the primary burner.

9.3.2.3 LIC Agent Purging System

9.3.2.3.1 The agent feed line to the LIC primary chamber is purged out with compressed air (plant air) and diesel fuel oil to reduce the amount of residual agent in the system at the end of an agent-burning operation. The purge is performed while the primary chamber is still at operating temperature.

9.3.2.4 LIC Secondary Chamber

9.3.2.4.1 The LIC secondary chamber is a refractory-lined cylinder with a high-velocity burner mounted near the top of the chamber wall; the burner introduces combustion air and fuel gas into the chamber. A liquid spray nozzle is also mounted on the chamber roof, which introduces spent decontamination solution or process water and atomizing air into the chamber. The chamber temperature is measured by thermocouples on the exhaust duct and is controlled by modulating either the fuel supplied to the burner or the liquid supplied to the nozzle, or both. During steady-state operation, the CA flow is modulated along with fuel gas to maintain chamber temperature.

9.3.2.5 LIC Slag Removal System (LIC SRS)

9.3.2.5.1 The incineration of chemical agent and the spent decontamination solutions in the LICs cause the generation of a "glass like" slag waste stream. Slag (in a molten state) accumulates in the secondary chambers of the LICs. Each batch of slag is removed from the SRS and placed into refractory or Kaowool lined drums. The lined drums are then shipped to an approved Hazardous Waste Management Facility. Each LIC secondary chamber is equipped with a view port, which allows the operator to visually determine the molten slag level within the secondary chamber. The slag is removed before the level reaches the lower boundary of the secondary chamber exhaust gas outlet.

9.3.3 **Process Overview - Metal Parts Furnace (MPF)**

9.3.3.1 The MPF consists of a primary furnace, an afterburner, a feed airlock, a discharge airlock, a discharge tray unloading conveyor, a discharge cooling conveyor, combustion air blower, MPF secondary cooling water, and associated instrumentation and piping. The function of the MPF is to thermally treat contaminated metal parts, including drained munitions, bulk containers, and mine drums. These items are loaded onto metal parts trays and are fed to the MPF by a system of roller conveyors. The MPF is heated by 10 burners and the afterburner by two burners. Any residual agent on the metal parts is volatilized and burned in the primary furnace. The decontaminated parts are transferred

to the outside of the MDB through a discharge airlock. These decontaminated metal parts are then transferred through the discharge tray-unloading conveyor to the discharge cooling conveyor where they await transfer to a transport container for disposal. The exhaust gases from the MPF flow to the afterburner where any unburned gases and agent are destroyed by incineration at high temperature (see MPF D-tables in Attachment 19 (Instrumentation and Waste Feed Cut-Off Tables) for operating temperature). The exhaust gases then flow to the MPF PAS where they are quenched and neutralized.

9.3.3.2 MPF Feed Airlock

9.3.3.2.1 The MPF system feed conveyor/airlock is a steel chamber with pneumatically actuated doors at each end, enclosing a powered roller conveyor. One end of the airlock opens to the first floor corridor through which a charge car travels to bring loaded trays to the MPF airlock system. The other end of the airlock opens to the MPF.

9.3.3.3 MPF Primary Furnace

9.3.3.3.1 The MPF primary furnace is a refractory-lined chamber with a refractory-lined door at the charge end and a refractory-lined, water-cooled door at the discharge end. One end of the MPF opens to the feed airlock and the other end opens to the discharge airlock. The furnace is long enough to hold three metal parts trays at a time. The first third of the furnace length (close to the charge airlock) is called Zone 1; the second, Zone 2; and the third, Zone 3.

9.3.3.4 MPF Discharge Airlock

9.3.3.4.1 The MPF discharge conveyor/airlock is an insulated steel chamber with pneumatically actuated doors at each end, enclosing a powered roller conveyor. One end of the airlock opens to the MPF from which trays of decontaminated metal parts are fed. The other end of the airlock opens outside the MDB to the MPF discharge tray-unloading conveyor.

9.3.3.5 MPF Discharge Tray Unloading Conveyor

9.3.3.5.1 The MPF discharge tray-unloading conveyor is a powered roller conveyor located outside the MDB to which trays are transferred from the discharge conveyor/airlock. The purpose of this conveyor is to move a tray far enough away from the MDB for it to be moved perpendicularly by the discharge-cooling conveyor. The discharge tray-unloading conveyor is long enough to hold one tray at a time.

9.3.3.6 MPF Discharge Cooling Conveyor

9.3.3.6.1 The MPF discharge-cooling conveyor is a chain conveyor positioned in a perpendicular manner to the discharge tray-unloading conveyor so that the chains run between the rollers. This conveyor consists of a chain conveyor section and a gravity roller section. At the loading end, the chain conveyor actually extends between the rollers of the discharge tray-unloading conveyor. At the discharge end, the chain conveyor section unloads the trays onto the gravity roller section, which is long enough to hold a single tray. This gravity section has a mechanical stop to prevent the tray from rolling off and falling on the ground. When a tray is sitting on the gravity roller section, the metal parts are removed from the tray by a bridge crane, an electromagnet, or both and transferred to

a transport container. The section rollers are in three sections separated by gaps to provide forklift access for removing empty trays.

9.3.3.7 MPF Afterburner

9.3.3.7.1 The purpose of the afterburner is to complete the incineration and detoxification of gases from the charge airlock, discharge airlock, and burnout chamber. The afterburner is a horizontal, refractory-lined, cylindrical unit and operates as specified in the MPF D-tables in Attachment 19 (Instrumentation and Waste Feed Cut-Off Tables). The afterburner is fired by fuel gas. Gases leaving the afterburner enter the MPF PAS.

9.3.3.8 MPF Combustion Air Blower

9.3.3.8.1 All combustion air for the MPF system, including the afterburner, is provided by the MPF combustion air blower, which is located in the MPF room.

9.3.3.9 MPF Secondary Cooling Water System

9.3.3.9.1 The MPF secondary cooling water system is a closed-loop system that circulates water to the MPF airlock doors. Heat is removed from the doors by cooling water and is transferred through a plate heat exchanger to the primary cooling system.

9.3.4 **Process Overview - Deactivation Furnace System (DFS)**

9.3.4.1 The DFS consists of a rotary kiln, a Heated Discharge Conveyor (HDC), an afterburner, a kiln combustion air blower, an afterburner combustion air blower, a blast attenuation duct, a cyclone, and associated instrumentation and piping. The furnace is also used to destroy spent decontamination solution and rinse water that is generated from the decontamination of the feed chutes. The function of the DFS is to burn rockets, landmines, and energetics removed from projectiles. These objects are burned in the rotary kiln with the products of combustion flowing to the afterburner where the gases are thermally treated. Exhaust gases go to the cyclone for removal of particulates, prior to the afterburner, and then flow to the DFS PAS where they are quenched and neutralized. The metal parts and other non-combustibles that discharge from the kiln are further thermally treated in the HDC and then discharged to a bin. The DFS kiln is a countercurrent furnace in which munitions travel in the opposite direction of the exhaust gas stream. The feed to the DFS comes from two ECRs in which various munition-processing activities take place. Rocket pieces, mines, bursters, boosters, and fuzes are fed by gravity from each ECR through a feed chute. Each feed chute is provided with a built-in system of blast gates to meter the munition pieces to the rotary kiln.

9.3.4.2 DFS Rotary Kiln

9.3.4.2.1 The DFS rotary kiln is a steel alloy cylinder composed of five sections bolted together and operates with a gas temperature range specified by the DFS D-tables in Attachment 19 (Instrumentation and Waste Feed Cut-Off Tables). The kiln is located in the DFS room, which is an explosion containment area because of the explosive nature of the materials processed in the kiln. The kiln rotates on and is supported by trunnion rollers. As the kiln rotates, an internal spiral baffle (known as flights) conveys the material through the length of the rotary kiln. At each end of the rotating kiln is a stationary

subassembly, one for charging the kiln and one for discharging. The charge end contains the feed chutes and exhaust duct. At the discharge end is the rotary kiln burner and the discharge chute.

9.3.4.2.2 The rotary kiln is surrounded by an air-cooled shroud, which is designed to reduce heat transfer to the room. Room air enters the shroud close to the charge end of the rotary kiln and a large portion of it flows on the outside of the rotary kiln and into the kiln at the discharge end. This flow of air reduces heat transfer from the kiln to the room by keeping the room temperature below 150°F. The airflow also provides additional combustion air for the combustible material inside the kiln.

9.3.4.3 DFS Heated Discharge Conveyor (HDC)

9.3.4.3.1 The DFS HDC is a sixty-foot long bucket conveyor in an internally insulated steel housing. The feed end of the HDC is located in the DFS room connected to the kiln discharge assembly. Material that has traveled through kiln falls directly into the bucket conveyor. The material is carried to the discharge end of the HDC located in a blast enclosure outside the DFS room wall. Two banks of electric heaters provide sufficient heat to ensure that the material on the bucket conveyor is decontaminated to the 5X level (i.e. thermal treatment at 1000° F for a minimum of 15 minutes). The HDC discharges the material through a chute and into a residue waste bin located inside the blast enclosure. Inside the chute is a tipping bucket gate followed by a slide gate which isolates the residue waste bin from the HDC during bin change-out.

9.3.4.4 DFS Blast Attenuation Duct (BLAD)

9.3.4.4.1 Because the DFS rotary kiln is designed to process energetics that may detonate, the exhaust duct leading from the kiln is equipped with a Blast Attenuation Duct (BLAD) outside the DFS room to prevent a large blast shock wave from reaching the PAS. This BLAD consists of a short section of duct that is wider than the rest, within which are mounted several concentric baffle plates. The larger cross section of the BLAD combined with the baffle plates acts to dissipate any pressure wave from the kiln.

9.3.4.5 DFS Cyclone

9.3.4.5.1 The DFS cyclone is a vertical cylindrical chamber with a tangential inlet near the top. The cyclone is designed to separate particulates from the flue gas stream going to the afterburner. Exhaust gas from the DFS rotary kiln enters the cyclone. Centrifugal force causes the particulates to travel to the sidewall of the chamber where friction slows them and causes them to fall to the conical bottom. There they fall into a residue bin.

9.3.4.6 DFS Afterburner

9.3.4.6.1 The DFS afterburner is a vertical cylindrical, refractory-lined chamber located just outside the PAS building. It has two fuel gas burners mounted on the top of the sidewall. Exhaust gases from the DFS rotary kiln, after passing through the cyclone, enter the furnace from the top, are heated by the burners to a temperature specified by the DFS D-tables in Attachment 19 (Instrumentation and Waste Feed Cut-Off Tables) and exit from the side on the bottom. Combustion air and fuel gas enter the chamber through the burners. The chamber temperature is measured by thermocouples in the afterburner

chamber near the exhaust gas outlet and is controlled by modulating the fuel supplied to the burners.

9.3.5 **Process Overview - Pollution Abatement Systems (PAS) For Incinerators**

9.3.5.1 Each of the four furnace systems (MPF, DFS, LIC 1, and LIC 2) has a PAS to cool and chemically treat exhaust gases before they are released to the atmosphere. These four furnaces use a wet PAS that is designed around a packed bed scrubber tower. Each wet PAS consists of a quench tower, venturi scrubber, packed bed scrubber tower, demister, exhaust blower, various recirculation and transfer pumps, and associated piping and instrumentation. All four of the wet PASs discharge exhaust gases into one common stack. The function of each PAS is to cool and chemically treat the exhaust gas from the furnace, reducing the emission of pollutants to environmentally acceptable levels. High temperature exhaust gases from the furnace enter the PAS and travel upward through the quench tower in which caustic brine and water sprays cool the gases. The gases then travel down through a venturi scrubber, which mixes them at high velocity with more caustic brine. This removes most of the acid gases and particulates. The gases flow from the venturi upward to a packed bed scrubber where they again react with a caustic brine solution to remove the remaining acid gases. The final stages are demisters, which remove mist, metal oxides, and other solid particulates. From the demister vessel, the gases flow to the exhaust blower, which discharges the gases to the stack.

9.3.5.2 Quench Tower

9.3.5.2.1 The quench tower is a Hastelloy vertical vessel that contains multiple banks of spray nozzles. Furnace gases enter near the bottom of the tower through a refractory-lined inlet nozzle. The gases flow up through the caustic mist created by the sprays and are cooled near their saturation temperature as water is evaporated. In addition, acid gases in the exhaust stream react with the caustic inside the tower. Exhaust gases exit the top of the tower and unevaporated liquid falls to the bottom where it drains by gravity into the bottom of the scrubber sump.

9.3.5.3 Venturi Scrubber

9.3.5.3.1 The venturi scrubber is a Hastelloy variable throat venturi. The quenched exhaust gases flow down through the venturi scrubber where they encounter radial and tangential sprays of caustic brine. The brine droplets further react with acids and entrap fine solid particulates. The gas and liquid streams combine and are accelerated to high velocity in the throat of the venturi. The high velocity, combined with a 90-degree change in direction, causes the removal of particulates from the gas. The removal efficiency is determined by the velocity of the mixture, which is dependent on the differential pressure across the venturi. The differential pressure across the venturi is maintained at a constant value by means of a differential pressure transmitter, controller, and actuator that opens or closes the throat of the venturi. The outlet of the venturi scrubber is connected to the inlet of the scrubber tower, enabling the gas and liquid mixture to flow to the scrubber with minimal friction loss. The cyclonic action caused by the tangential inlet removes additional particulates and aids neutralization of acid gases. The caustic brine to the venturi is supplied by the quench brine pump through a separate branch of the pump discharge. A magnetic flow meter, flow controller, and control valve maintain the brine flow to the venturi at a constant rate.

9.3.5.4 Scrubber Tower

9.3.5.4.1 The scrubber tower is a vertical Hastelloy vessel with internals that include a chimney tray, packed bed, distribution weir, and demister pad. The stream from the venturi scrubber enters the scrubber tower at the bottom of the tower. The gas portion of the stream flows up through the tower while the entrained liquid droplets fall to the bottom or sides of the tower. The brine in the scrubber sump then flows to the quench brine pump, which recycles it to the quench tower and the venturi scrubber, both of which drain back to the scrubber sump, completing the cycle.

9.3.5.5 Demister Vessel

9.3.5.5.1 The demister is a fiberglass, flat-bottom, dome-top vessel with multiple vertically-mounted filter elements (called candles). The candles remove phosphoric acid (H_3PO_4), metal oxides, and other entrained solid and liquid particulates from the gas stream. Entrained liquids form droplets on the candles; these droplets are collected in the bottom of the demister and periodically pumped to the sump. Water-soluble particulates embedded in the candle are dissolved by these droplets and are also carried to the sump. Non-soluble particles on the filter may also be suspended by the flowing liquid and carried to the sump. Non-soluble particles which become embedded in the filter material will not be washed down and will eventually require replacement of the candle packing. Because elements in the demister require periodic cleaning or replacement, a spare demister vessel makes it possible for manual switchover from either on-line demister when cleaning or replacement becomes necessary.

9.3.5.6 Exhaust Blower

9.3.5.6.1 The purpose of the exhaust blower is to discharge treated air to the common stack. The exhaust blower consists of two single-stage, open-wheel, single-speed fans mounted in series to form a two-stage blower. Each stage has a separate motor, mounting pad, and control instrumentation.

9.3.5.7 PAS Condensate Removal System

9.3.5.7.1 Moisture from the exhaust streams of the operating furnace systems condenses in the connecting exhaust ducting. The condensate collects in the base of non-operating ID fans and base of the common stack. The moisture is removed from the ID fans, common stack and CEMS monitors via a closed loop system. The condensate is piped to two condensate collectors where it is pneumatically pumped directly into tank 103 for use as make up water for the scrubber systems.

9.4 DESCRIPTION OF FACILITY SUPPORT SYSTEMS

9.4.1 Brine Reduction Area (BRA) Overview

9.4.1.1 The Brine Reduction Area (BRA) consists of brine holding tanks, brine feed pumps, brine evaporator packages, drum dryers, and associated instrumentation and piping. The function of the BRA is to process brine generated by the PASs associated with the various furnaces. The brine is stored in the brine holding tanks where it is sampled and

checked for the presence of agent. From there, it proceeds to the brine evaporator, which removes a significant amount of water and prepares the brine for drying. The brine is sent to the drum dryers, which reduce the brine to a salt. The salt is deposited into containers for storage and transportation offsite.

9.4.1.2 Brine Holding Tanks

9.4.1.2.1 The brine holding tanks in the BRA are used to hold brine for feed to the evaporators or transport tankers. There are four brine holding tanks. The tanks are constructed of lined carbon steel and are approximately 20 feet in diameter and 20 feet high. The tanks are located just outside the PUB in the BRA. Each tank has a level indication and alarms for both high level and low level conditions.

9.4.1.2.2 The primary purpose of the brine tanks is to act as holding tanks, which enable the brine from the PAS to be sampled before it is sent to be dried. This is the final checkpoint in the process for the presence of residual agent. For this reason, a tank that is being filled cannot simultaneously be used to feed the evaporator or drum dryers.

9.4.1.3 Evaporator Package

9.4.1.3.1 Each evaporator package consists of a brine heat exchanger, a brine flash evaporator, two brine circulation pumps, and associated piping and instrumentation. Brine from the brine feed pumps can be processed through the evaporator to improve the performance of the drum dryers, or the evaporator can be bypassed and the brine sent directly to the drum dryers.

9.4.1.3.2 Brine exits the flash evaporator to the circulation pump. The circulator pump is used to circulate brine in the flash evaporator or feed the concentrated/pre-heated brine to the drum dryers via a common header.

9.4.1.3.3 A pressure gauge is installed on the steam inlet side of the heat exchanger. The gauge continuously measures the steam pressure to the heat exchanger.

9.4.1.3.4 If the pressure of the brine inside the flash evaporator exceeds 15 psig, a pressure relief valve will release steam to the evaporator catch basin. This safety feature is provided to protect the flash evaporator from rupturing if this atypical event should occur.

9.4.1.4 Drum Dryer Package

9.4.1.4.1 Within each drum dryer enclosure the concentrated brine is fed unfiltered to the two rotating drums. Under some conditions, the liquid volume forms a nip. Flow or level control is used to govern nip level.

9.4.1.4.2 Liquid flow or level controls on the drum dryers regulate the feed of concentrated brine to make up for losses from evaporation in the drum dryer and salt cake removal. Steam is supplied at variable pressure to heat the inside of each of two drums as they rotate. As a result, salts in the concentrated brine cake onto the rotating drums. A knife blade scrapes the dried salts off the rotating drums. The brine salts drop onto a partially enclosed conveyor. The brine salts drop into lined collection containers, and a wiper blade on the underside of the conveyor scrapes any remaining salt product off of each conveyor.

When a collection container is full, the conveyor is shut off, the full collection container is removed, an empty collection container is placed underneath the conveyor, and the conveyor is started again.

9.4.1.4.3 Full collection containers are transferred to an offsite hazardous waste treatment, storage, and disposal facility. The brine salt is sampled and analyzed as required by Attachment 2 (Waste Analysis Plan).

9.4.1.5 BRA Sump Pumps

9.4.1.5.1 There are two sumps/sump pumps located in the BRA. The sumps are located adjacent to the flash evaporators and provide secondary containment for any leakage from the evaporators, heat exchangers, and drum dryers. Each sump is 27 inches wide by 27 inches long by 27 inches deep. Each sump has a capacity of 80 gallons for a total capacity of 160 gallons.

9.4.1.5.2 Any leaks or spills in the BRA inside the PUB flow to and collect in the two sumps. A liquid level indicator at each sump is used to prevent overfilling. When a high liquid level is detected by the level indicator, an alarm signals. Each sump has an air driven diaphragm pump. In auto mode, the pump is activated by a local level switch. The pumps discharge into the brine holding tanks. The sumps are visually inspected for the presence and level of liquid when brine is processed.

9.4.2 **Brine Reduction Area Pollution Abatement System (BRA PAS)**

9.4.2.1 The Brine Reduction Area Pollution Abatement System (BRA PAS) is designed to condition and collect contaminates from the three drum dryers and two evaporators. The main components of the BRA PAS are the knockout box, gas burner, four baghouse modules, exhaust fan and stack. In addition, equipment in the BRA PAS includes piping, instrumentation, and ancillary utility support equipment.

9.4.2.2 The process gases from the three drum dryers are separately directed to the knockout box. At the knockout box, the gas stream is slowed to allow the heavier particulate and water condensation to leave the flow. This particulate and condensation are discharged through the knockout box hopper rotary valve and a flexible connector to a sealed container. The particulate discharge is sealed to eliminate fugitive emissions.

9.4.2.3 The exhaust gases from the three drum dryers, combined in the knockout box, are routed to the 10 million BTU/hr (British Thermal Unit/hour) direct fired BRA PAS gas burner. The temperature of the dryer exhaust is raised to 225-270°F by the burner. After exiting the BRA PAS gas burner, the drum dryer gases merge with the moisture laden gases from the evaporators. The higher temperature prevents condensation in the system.

9.4.2.4 The gas stream is then drawn into the baghouse modules. There are four baghouse modules. One or more baghouse modules are in use during operations in the BRA. The gas stream is at least 225° F when it enters the baghouse. The gas stream is pulled through the filter bags where particulate matter is collected. The filtering efficiency rating is designed to be 99.99% for particulate that is less than or equal to 0.3 micron. The particulate drops from the bags to the bottom of the baghouse where it is discharged through a rotary valve and hose which in turn empties into a sealed container.

9.4.2.5 The cleaned gases are discharged through the ID fan. The gases are then discharged through the exhaust stack.

9.4.3 **Toxic Storage and Handling Systems Overview**

9.4.3.1 Toxic storage and handling systems consist of two discrete functional areas. The following description applies to the two tanks for agent collection (ACS-TANK-101 and -102) and the three tanks for spent decontamination solution (SDS-TANK-101, -102, and -103). The agent collection system consists of the piping from: the AQS for the BDS, RSM, and MDM processing systems; the agent holding tank; and the agent surge tank. The spent decontamination collection system consists of the spent decontamination sumps and the spent decontamination holding tanks. All of the tanks have level transmitters that provide both low- and high-level alarms to the Process Data Acquisition and Recording System (PDARS). All tanks are at atmospheric pressure, and pressure is not measured. Temperature of liquids is ambient and is not measured. Flows to the tanks are not measured. Specific gravities of the agent and decontamination solutions are measured according to Attachment 2 (Waste Analysis Plan). Liquid level monitoring and alarms in the ACS and SDS tanks are provided by level indicators/transmitters. Alarm set points are program-adjustable for the tank level based upon different liquid densities. A listing of the instruments for the tanks, piping, and valving follows:

9.4.3.1.1 Tank level transmitters[11] indicating an alarm at low-level and high-level.

9.4.3.1.2 Tank level switches indicating an alarm at low-low level and high-high level.

9.4.3.1.3 Valve position switches.

9.4.3.1.4 Strainer differential pressure transmitters are part of the Agent and Spent Decontamination Tank Systems.

9.4.3.1.5 Liquid flow control.

9.4.3.1.6 Liquid flow pressure indicator and transmitter.

9.4.3.1.7 Mass flow measurement and transmitter.

9.4.3.2 Agent Collection Tank System (ACS)

9.4.3.2.1 The Agent Collection System (ACS) is designed to receive, transfer, and store agent drained from munitions and containers.

9.4.3.2.2 There are two tanks in the ACS system, ACS-TANK-101 (the agent holding tank) and ACS-TANK-102 (the agent surge tank). These tanks are located in the TOX on the first floor of the MDB.

[11] NOTE: Tank transmitters indicate low- and high-level alarms while tank switches indicate low-low and high-high levels.

9.4.3.2.3 The venting of agent tanks is controlled by pressure differentials without the need for manual switching of vents. Vapors from the agent tanks escape through a conservation breather vent on ACS-TANK-102, still within the TOX. The TOX is a level A area and is maintained at negative pressure. Vapors passing through the conservation breather vent will combine with TOX ventilation air and be drawn through the exhaust carbon filter units.

9.4.3.2.4 In the event of a rapid pressure buildup, such as during a fire, the vent is not sized large enough to handle the expected agent vaporization rate. A rupture disk, rated at 15 psig and vented to the TOX, is provided on ACS-TANK-101 for this purpose. The rupture disk is located in a nozzle.

9.4.3.2.5 Adjacent to the rupture disk, in a separate nozzle, is a vacuum relief valve set at 10 psig. If agent is pumped from the tank at a rate faster than it is supplied to the tank by the drain station, a vacuum in the tank may develop. This vacuum relief valve allows air to pass into the tank from the TOX. It does not vent air out of the agent tanks.

9.4.3.2.6 Downstream of the strainers, the discharge lines from ACS-TANK-101 and ACS-TANK-102 combine in a common line to the agent feed pump header. Two LIC agent feed pumps and a spare are provided. Each of the operating agent feed pumps has a flow control loop that recirculates agent from the pump discharge line to the pump inlet header. During normal operation, agent is continuously recirculated in the flow control loops since the design flow rate is lower than the rated capacity of the pumps. Pressure safety valves are provided with each pump to recirculate agent from the pump discharge to the pump inlet if the pressure at the pump discharge reaches 100 psig. These pressure safety valves protect the pumps in case a downstream control or manual valve is closed.

9.4.3.2.7 A mass flow element, pressure-indicating transmitter, low pressure switch, and shutoff valve are located on each agent line prior to penetration into the primary Liquid Incinerator room. If low flow is sensed in the agent line downstream of the agent pump, an alarm will sound in the Control Room and the agent line shutoff valve is closed. When low pressure occurs in the agent line an alarm will sound in the Control Room, the online pump is shut down and the spare pump is started. If a low-low pressure is sensed in this line, the corresponding agent feed pump is stopped.

9.4.3.2.8 A low pressure switch and two tight shutoff valves are also located on the agent line prior to the primary LIC Room. If a low pressure is sensed in the agent line upstream of the primary LIC, an alarm will sound in the Control Room. The shutoff valves are closed, thereby stopping flow to the incinerator.

9.4.3.3 <u>Agent Collection System (ACS) Secondary Containment</u>

9.4.3.3.1 There are two tanks in the agent collection tank system, ACS-TANK-101 and ACS-TANK-102. These tanks are located in the TOX on the first floor of the MDB. The MDB is designed to contain an accidental release of agent within the structure for an extended period of time.

9.4.3.3.2 The floor of the TOX is sloped to a depressed area and that to a 500-gallon sump. The secondary containment volume of the containment trench and sump approximates 2,072

gallons. Because the TOX is located inside the MDB, there is no run on or infiltration expected, and no increase in containment volume is required for these factors.

9.4.3.3.3 The ventilation system is designed to act as a key element in the confinement of agent by operating and maintaining the MDB at a negative pressure. The interior faces of the exterior walls are sealed to protect the external environment. The same sealing procedure is applied to ventilation ducting and instrumentation lines that penetrate the walls. Agent monitors detect any agent leaks from Category A through the walls or ventilation systems.

9.4.3.4 Spent Decon Tank System (SDS)

9.4.3.4.1 The SDS is designed to collect and store spent decontamination solution which results from the decontamination and washdown of agent-contaminated equipment or personnel.

9.4.3.4.2 There are three tanks in the spent decontamination solution tank system (SDS-TANK-101, -102, and -103). These tanks are located in the SDS Room next to the TOX on the first floor of the MDB. Each spent decontamination holding tank has one vent to the SDS Room in order to maintain the tank at atmospheric pressure. To allow for initiation of spent decontamination solution pumping, an inlet valve to a spent decontamination holding tank must be open and the tank cannot be at high level. If these conditions do not exist, pumping is not initiated. When a tank has been selected to fill and the system is placed on automatic, the inlet valve is opened and pumping is permitted to progress.

9.4.3.5 SDS Secondary Containment

9.4.3.5.1 The floor of the SDS Room is sloped to a containment area and a secondary containment sump. The containment volume is approximately 3,060 gallons. This volume is greater than the capacity of the largest tank. Because the SDS Room is located inside a building, there is no runon or infiltration expected, and no increase in containment volume is required for these factors.

9.4.3.5.2 Spent decontamination solutions are collected from the MDB sumps (24-Hour Intermittent Collection Units also known as ICUs). Secondary containment for all of the 24-Hour ICUs in the spent decontamination holding tank system is addressed by applying the external liner concept. Generally, each 24-Hour ICU is of welded steel construction and is surrounded by an external concrete liner. Because all of the sumps and associated external liners are in the MDB, the specific aspects of the external liner requirements are duplicated throughout this system.

9.4.3.5.3 All of the sumps that are used for primary containment in the spent decontamination holding tank system are basically similar. Most sumps are constructed of epoxy-coated welded steel, measure 2.3 feet by 2.3 feet by 2.25 feet, and contain 89 gallons. The sump is surrounded by a cast-in-place, epoxy-coated external concrete liner. The liner is designed and installed to surround the sump completely. The liner will contain any waste material that may leak from the sump and will prevent both lateral and vertical migration of the waste. The typical dimensions of the liner are 2.75 feet by 2.75 feet by 2.38 feet.

9.4.4 **Heating, Ventilation, and Air Conditioning Systems Overview**

9.4.4.1 The Heating, Ventilation, and Air Conditioning (HVAC) systems consist of the cascade HVAC serving the MDB process area, the Control Room (CON) HVAC system serving the areas normally occupied by personnel in the MDB, the MDB and CON chilled water systems, and the hot water heating systems. There is also ventilation supplied to the "D" areas which is not part of the cascade system. The HVAC systems are designed to respond automatically to upsets without operator assistance.

9.4.4.2 Cascade HVAC System

9.4.4.2.1 The cascade HVAC system provides a constant volume of air in quantities sufficient to:

9.4.4.2.1.1 dilute any concentration of agent vapor that may be present.

9.4.4.2.1.2 maintain the flow of air from areas of low contamination probability to areas of higher contamination probability.

9.4.4.2.1.3 eliminate (by filtration) the possibility of releasing contaminants to the atmosphere.

9.4.4.2.1.4 provide human comfort.

9.4.4.2.2 Each room in the MDB has a designated category rating based on the potential for agent contamination. (See Figures 9-4-1 through 9-4-4 for MDB air ventilation categories.) NOTE: Some areas of the MDB can temporarily be upgraded during certain operations (i.e., the UPA upgraded from “C” to “B” when munitions are removed from ONCs).

9.4.4.2.2.1 Category A - Rooms have a high probability of contamination by either agent liquid or vapor.

9.4.4.2.2.2 Category A/B - An A/B room meets all design criteria for an A area, but in typical service acts as a B area (i.e., only a vapor agent hazard is present). However, under some circumstances, a liquid agent hazard may be present, hence the need for design to meet A area requirements.

9.4.4.2.2.3 Category B - Rooms with a high probability of agent vapor contamination resulting from routine operations.

9.4.4.2.2.4 Category C - Rooms with a low probability of agent vapor contamination.

9.4.4.2.2.5 Category D - Rooms that are unlikely to ever have agent contamination.

9.4.4.2.2.6 Category E - Rooms are maintained from being contaminated by agent at all times barring the possibility of a catastrophic event.

9.4.4.2.3 Only rooms with category A, A/B, B, and C are maintained under a continuous negative pressure by the HVAC system.[12] All Category A, A/B, B, and C areas are provided with an appropriate ventilation system to: (1) collect, treat, and monitor ventilation air from

[12] Rooms with a category D rating are maintained at atmospheric pressure, but neither supply nor exhaust air is filtered. Rooms with a category E rating are maintained under a constant positive pressure with charcoal filtered supply air.

the work area that may contain toxic chemical agent vapors prior to being exhausted to the ambient air; (2) provide mixing of air that is essential for monitoring work areas with agent detection devices; and (3) provide a negative pressure within the work areas to eliminate escape of agent vapors.

9.4.4.2.4 Specific areas of the MDB are kept under negative pressure in such a way that the areas of the highest potential of contamination are at a greater negative pressure than the lower contamination level area. Thus, the air always flows from cleaner areas to the more contaminated areas.

9.4.4.2.5 Isolation dampers are located between category A, A/B, or B rooms and category C rooms to prevent possible migration of chemical agent to a higher pressure area in case of chemical spill and a power failure. The HVAC equipment runs on essential power from the emergency generator in the event of a main power loss.

9.4.4.2.6 Fire dampers are provided in ducts passing through fire-treated walls and ducts providing service to two floors. The fire dampers are required to isolate fires within the MDB. The Control Room operator can manually open closed fire dampers that have been closed by a fire panel (with the exception of the Control Room fire dampers).

9.4.4.3 Furnace Heating and Ventilation System

9.4.4.3.1 The furnace rooms are supplied air separately from the rest of the MDB. Air enters a given furnace room by means of either an outside air intake, face and bypass coil-filter unit or by direct transfer of air through isolation valves from an adjacent air space. The LICs and DFS air is provided with cooling coils. The supply air rate meets the requirements for both room ventilation and furnace combustion needs. While the furnace combustion air is exhausted through the PAS, the remainder is exhausted through the exhaust air filtration units.

9.4.4.4 Mechanical Equipment Room (MER) and Miscellaneous Areas

9.4.4.4.1 Miscellaneous area ventilation systems consists of intake or exhaust fans for once-through ventilation. They serve the following non-critical support areas of the MDB:

9.4.4.4.1.1 Mechanical Equipment Room (MER) air-handling room.

9.4.4.4.1.2 chiller room.

9.4.4.4.1.3 electrical rooms.

9.4.4.4.1.4 battery room.

9.4.4.4.1.5 emergency generator switchgear room.

9.4.4.4.1.6 MPF secondary cooling water equipment room.

9.4.4.4.2 These rooms are maintained at atmospheric pressure. Relative humidity is not controlled. The amount of air supplied to each area is regulated to maintain a set temperature rise in summer.

9.4.4.5 CON HVAC System

9.4.4.5.1 The functions of the CON HVAC system is to maintain the required positive-pressure relationship between the CON and the MDB process areas and control equipment cooling as well as to provide human comfort. Air recirculated to the CON ventilation system is routed through an air filtration unit that contains a series of five filters as follows:

9.4.4.5.1.1 The first, a media particulate filter, removes any gross particulate.

9.4.4.5.1.2 The second filter, a High Efficiency Particulate Air (HEPA), removes any fine particulates.

9.4.4.5.1.3 Activated carbon filters in series remove any airborne agent.

9.4.4.5.1.4 The final filter, a HEPA, is used to collect any fine particulates that may escape from the carbon filters.

9.4.4.6 Exhaust Filtration System

9.4.4.6.1 Air flowing through the air-filtration units to the atmosphere passes through a series of nine filters within each unit as follows:

9.4.4.6.1.1 The first, a media particulate filter, removes any gross particulate.

9.4.4.6.1.2 A HEPA filter removes any fine particulates.

9.4.4.6.1.3 Activated carbon filters in series remove any airborne agent.

9.4.4.6.1.4 A final HEPA filter is used to collect any fine particulates that may escape from the carbon filters.

9.4.4.6.2 Each filter unit is provided with gauges to indicate the pressure drop across the filters. Sampling ports are provided between the banks of charcoal filters and in the exhaust stack. The filter locations and duties for the plant are summarized in Table 9-4-2, shown below.

Table 9-4-2
FILTER LOCATIONS AND DUTIES

Location	Design Capacity (scfm)	No. Units Installed	
		Operating	Spare
MUNITIONS DEMILITARIZATION BUILDING			
Control Room	10,757	1	0
Process Area	137,425	7	2

Table 9-4-2 FILTER LOCATIONS AND DUTIES			
Location	Design Capacity (scfm)	No. Units Installed	
		Operating	Spare
PERSONNEL AND MAINTENANCE BUILDING			
Emergency Medical Area	9,200	1	0

9.4.4.6.3 Ventilation flow requirements vary with each process area. The filter units specified are a common type for all areas. The varying capacity requirements are met by using multiple filter units in parallel for areas requiring ventilation at rates higher than one unit can provide. The basic filter unit is a skid-mounted design with welded housing, access doors, interior lighting, and observation and sample ports. This basic unit is designed to handle a nominal 15,000 scfm at a five inch water column pressure drop across each element.

9.4.5 **Bulk Chemical Storage (BCS) Overview**

9.4.5.1 The Bulk Chemical Storage (BCS) system describes the storage tank facilities that house the concentrated chemical solutions from which the decontamination, caustic wash, and neutralization solutions are made. The bulk chemicals are sodium hydroxide (18% by weight), sodium hypochlorite (12% by weight), and hydrochloric acid (2% by weight). Each bulk chemical has its own storage tank or tanks, its own supply pumps, and its own distribution system. The feed stock for the bulk chemicals is supplied by tanker trucks.

9.4.5.2 Sodium Hypochlorite (NaOCl) Storage

9.4.5.2.1 Trucks bring the 12% by weight NaOCl to the bulk chemical unloading area and pump it to the 15,000 gallon NaOCl storage tank. The storage tank is filled manually until the proper level is indicated. High and low levels in the tank are indicated and alarmed locally and at the Control Room. A transfer pump supplies the decontamination supply tanks with NaOCl. NaOCl is used to prepare decontamination solutions for VX, H, HD, and HT operations.

9.4.5.3 Sodium Hydroxide (NaOH) Storage

9.4.5.3.1 There are three tanks for the 18% by weight NaOH. Each tank holds 80,000 gallons. A local panel at the unloading pad provides indication of each tank level. Trucks bring the 18% by weight NaOH to the bulk chemical unloading area. The tank is filled manually until the proper level indication is observed on the panel. The NaOH is pumped directly to decontamination supply tanks and the PAS. NaOH is used in the PAS quench and scrubbing system. It is also used in the event of a major agent spill and is the decontamination solution used during GB operations. NaOH is supplied in the MDB at critical drops for major spills and equipment decontamination, as well as decontamination of Level A wearers.

9.4.5.4 Hydrochloric Acid (HCl) Storage

9.4.5.4.1 Hydrochloric acid, 2% by weight, is unloaded into a small storage tank located on the west side of the MDB. The storage tank is filled manually until the proper level is indicated. Hydrochloric acid will be used to rinse bulk containers that require special handling.

9.4.6 **Central Decon Supply (CDS) System**

9.4.6.1 The Central Decontamination Supply (CDS) system provides the TOCDF with working concentrations of the required decontamination (decon) solutions. CDS receives concentrated decon solutions (the stock) and dilutes the stock to the working concentration level by mixing it with process water. CDS receives the stock from two places: the NaOH (18%) storage tanks and the NaOCl (12%) storage tank. Once the decon is diluted, it is piped throughout the facility to the decon supply stations, the decon head tanks, and the spent decon holding tanks. The CDS consists of two 5,000 gallon decon supply tanks, two decon supply pumps, four decon head tanks, four process water head tanks, and two decon circulating pumps.

9.4.6.2 Different decon solutions are used depending on the munition campaign being run and the type of agent being processed. An 18% by weight NaOH solution is used to decontaminate agent GB. Agent VX and mustard (H, HD, and HT) require a 5½% by weight NaOCl solution for decontamination. Both decontamination solutions are prepared by a dilution and mixing process. One of the decon supply tanks is intended to be used as the supply tank for the decon distribution system, while the other is used to prepare a fresh batch of decon in batches of a nominal 5,000 gallons. NaOCl is used for personnel decontamination.

9.4.6.3 GB Sodium Hydroxide-Based Spent Decontamination Solution Storage

9.4.6.3.1 The GB spent decontamination solution is transferred from the SDS-TANK- 101, SDS-TANK- 102, or SDS-TANK- 103 into the 90-day storage tank. The spent decontamination solution is then transferred from the 90-day storage tank into tanker trucks parked at the Brine Transfer and Unloading Station located outside the double fence.

9.4.7 **Compressed Air Systems Overview**

9.4.7.1 The compressed air systems are used to supply high-pressure (125 psig) air for distribution throughout the facility.

9.4.7.2 Plant Air System (PLA)

9.4.7.2.1 The Plant Air (PLA) system is used for atomizing spent decontamination for incineration, for actuating the DPE sealer, for utility stations, for general plant maintenance, and for air-driven pumps. The PLA consists of redundant air compressors, a regenerative desiccant dryer, a plant air receiver, and associated controls, indicators, and alarms. A plant air header is routed throughout the facility to supply the users and makes up the majority of the plant air distribution system.

9.4.7.2.2 The PLA takes in air from the MER, compresses it through one of two redundant compressors, dries it with an air dryer, filters it through particulate filters, and stores it in

a receiver for use by the facility systems. Each compressor is rated for approximately 1,400 scfm.

9.4.7.2.3 Each of the two redundant compressors is sized for 100% normal load and compresses atmospheric air to 125 psig. One compressor handles the normal demand and the second handles the peaks. One compressor is the lead machine and runs continuously. The other follows or operates on start/stop control. A selector switch is provided for alternating the lead compressor in order to prevent uneven wear of the machines.

9.4.7.3 Instrument Air System (IAS)

9.4.7.3.1 The Instrument Air System (IAS) supplies air for all pneumatically operated instrumentation and valves. The IAS consists of redundant non-lubricated air compressors, a heatless regenerative desiccant dryer, a instrument air receiver, and associated controls, indicators, and alarms. A plant air header is routed throughout the facility to supply the users and makes up the majority of the instrument air distribution system.

9.4.7.3.2 The IAS takes in air through a filter, compresses it through one of two redundant compressors, dries it with an air dryer, filters it through particulate filters, and stores it in a receiver for use by the facility systems. Each compressor is rated for 200 scfm. One unit operates normally and one is a spare. The air receiver is provided to supply instrument air for 15 minutes with compressors shut down.

9.4.7.3.3 Each of the two redundant compressors is sized for 100% normal load, and compresses atmospheric air to 125 psig. One compressor is the lead machine and runs continuously. The other follows or operates on start/stop control. A selector switch is provided for alternating the lead compressor in order to prevent uneven wear of the machines.

9.4.7.4 Life Support System (LSS)

9.4.7.4.1 The Life Support System (LSS) is a separate air supply system totally independent of the plant air and instrument air systems. The system provides primary breathing and cooling air to the supplied air entries. The LSS consists of redundant non-lubricated air compressors with a particulate, HEPA, CBR (Chemical, Biological, and Radiological) and an additional HEPA inlet air filter, redundant regenerative heatless desicant dryers with coalescing prefilters, catalytic/charcoal after-filters, and an LSS air receiver, and associated controls, indicators, and alarms. An LSS header is routed throughout the MDB and to the PMB to support the users and makes up the majority of the life-support air distribution system.

9.4.7.4.2 The LSS takes air from the MER, compresses it through one of two redundant compressors, dries it with an air dryer, filters it through charcoal filters, and stores it in a receiver for use by the facility systems. Each of the two redundant compressors is sized for 100% normal load and compresses atmospheric air to 125 psig.

9.4.7.4.3 In the air compressor system, either compressor may be selected as the main or auxiliary air compressor by means of a manual control switch. During the supplied air entry activity, the LSS may be operated in the manual or automatic mode. In the manual mode,

both compressors operate continuously. In the automatic mode, the auxiliary compressor remains off when the pressure is at least 100 psig.

9.4.7.4.4 The air receiver stores air which is maintained normally between 90 and 125 psig. Pressures are in accordance with National Institute for Occupational Safety and Health (NIOSH) requirements. This receiver is sized to support three of the supplied air entry wearers with breathing and cooling air for approximately 30 minutes, providing adequate time for evacuation.

9.4.7.4.5 Supplied air entry hoses are provided for a maximum of six suit wearers within the Category A areas at one time. Dead end hose manifolds are strategically located within the Category A areas to allow access to the farthest point within the area, with a maximum hose length of 300 feet. The hoses remain connected to the hose manifolds. Each manifold has two spares, provisions for connecting four hoses, and provisions for remote operation of shutoff valves from outside the Category A area.

9.4.7.4.6 A compressor is provided for filling LSS air bottles. The compressor is rated for 5 scfm and 3,000 psig.

9.4.8 **Automatic Continuous Air Monitoring System (ACAMS)**

9.4.8.1 The Automatic Continuous Air Monitoring System (ACAMS) is an automated, continuous air-monitoring system with the ability to detect and report the concentration levels of agents GB, mustard, and VX in the air. The function of the ACAMS is to provide near real-time air monitoring for areas where agent may be present. The required locations for the ACAMS stations are shown in the Attachment 22 (Agent Monitoring Plan).

9.4.8.2 The ACAMS samples air during a preset period. Agent present in the sample air stream is collected on a solid sorbent bed during the sample period for Gas Chromatographic (GC) analysis. The results of the GC analysis of the sampled air are displayed on the front panel of the instrument. A permanent record of the gas chromatogram and the agent concentration is recorded on a strip-chart recorder. The ACAMS automatically triggers an audible and visible alarm system in Category C areas when the agent hazard level is beyond the preset hazard level. The preset level is set at 0.2 of the hazard level. The PDARS record the alarm and the concentration.

9.4.8.3 The ACAMS can operate at six different hazard levels:

9.4.8.3.1 IDLH - Immediately Dangerous to Life and Health (high-level exposure)

9.4.8.3.2 TWA - Time Weighted Average (low-level exposure)

9.4.8.3.3 ASC - Allowable Stack Concentration

9.4.8.3.4 GLD - Gross Level Detector (HD only)

9.4.8.3.5 MPL - Maximum Permissible Limit

9.4.8.3.6 ECL - Engineering Control Limit

9.4.8.4 The ACAMS has operating modes to enable it to detect the three agent types (GB, VX, and mustard) at the six different concentration levels. The ACAMS can operate in only one mode at a time.

9.4.9 **Depot Area Air Monitoring System (DAAMS)**

9.4.9.1 A second system for monitoring chemical agent is the Depot Area Air Monitoring System (DAAMS). DAAMS involves the passing of sampled air through a sorbent bed where any agent would be collected. The sample periods are predetermined and are in the range of three minutes to eight hours. DAAMS samples provide independent confirmation of positive ACAMS readings and a record of monitoring in areas not monitored by ACAMS.

9.4.10 **Continuous Emissions Monitoring System (CEMS)**

9.4.10.1 The Continuous Emissions Monitoring System (CEMS) serves several purposes. Oxygen and carbon monoxide analyzers are operated at the incinerator train emission point to meet O_2 and CO monitoring requirements of R315-14-7. Additional O_2 and CO analyzers are operated elsewhere in the incinerator trains to monitor the process conditions and to be used as backups for the compliance monitors.

9.4.11 **Steam Generation System (SGS)**

9.4.11.1 The Steam Generation System (SGS) consists of two boilers, a deaerator, feedwater pumps, three chemical feed packages, two steam condensate drain pump units, and associated instrumentation and piping. The purpose of the SGS is to provide high-pressure steam for use in the drum dryers and evaporators in the BRA. The SGS is closed-loop system. Fuel gas is burned in the boiler to vaporize the water which travels to the BRA. High-pressure condensate from the drum dryers is returned by the steam condensate drain pump units directly to the boiler. Low-pressure condensate from the evaporators and drip traps flows back to the deaerator and is returned to the boiler via the boiler feedwater pumps. Chemical additives that are required to optimize the process are added to the SGS through the three chemical feed packages. Makeup water from the process water header is introduced to the system through the deaerator.

9.4.12 **Water System Overview**

9.4.12.1 Water for the TOCDF is pumped from two wells located north of Stark Road (approximately 2 1/4 miles northeast of the TOCDF). Pumps are installed at the existing DCD withdrawal wells to produce the anticipated 616,000 gallons per day required at DCD. The DCD withdrawal wells are located east-northeast of the TOCDF and more than 5 miles distant. The well pumps supply water to the two existing reservoirs (with a combined capacity of 1 million gallons). These reservoirs supply the existing water distribution system at DCD. The water main is capable of supplying a 500,000-gallon Firewater Tank that may be used to augment the water supply from the two DCD reservoirs. This tank has been sized to provide for 12 hours of operation at the TOCDF and the fire water requirement of 330,000 gallons in lieu of the DCD water supply. The pump is provided at the Firewater Tank to meet fire flow demands. All Firewater Tank system components are designed to meet NFPA standards. The water is chlorinated at

the wellhead and then moves to the 500,000 gallon Firewater Tank if the tank is in use. The tank is located approximately 4,000 feet northeast of the TOCDF site. The water flows directly to the TOCDF past the Firewater Tank during periods of high demand and refills the tank during periods of low demand. When the water demand for the site exceeds the flow capacity of the wells, water flows out of the Firewater Tank, and a Firewater Pump just downstream of the tank increases the flow and pressure as needed. A pipe carries water from the Firewater Tank to the TOCDF. A pipe loop around the TOCDF supplies fire-fighting water to the site and to the fire-fighting systems in the CHB, PMB, and MDB. A pipe from this loop supplies water for the Water Treatment System (WTS, located in the PMB). Softened water from the WTS feeds the Potable Water System (POT) and Process Water Systems (PRW). Outside water tanks and piping are insulated and heat-traced to prevent freezing in cold weather. A pressure-reducing station on the water supply pipe at the west edge of the TOCDF provides well water at a reduced pressure to downstream users such as the Chemical Assessment Laboratory (CAL) and the Chemical Agent Munitions Disposal System (CAMDS).

9.4.12.2 Process Water System (PRW)

9.4.12.2.1 The Process Water (PRW) system supports the demilitarization and decontamination operations at the TOCDF. Process water is used for decontamination hose stations, decontamination showers, decontamination solution makeup, makeup for boilers, chilled water and secondary cooling systems, and scrubbers. The PRW consists of a 53,000 gallon storage tank, three supply pumps, and associated controls, indicators, and process water distribution system. Each supply pump is rated at 50% of system capacity. One pump is used as a spare. One pump normally operates, and the second pump operates during high flow demand. A bypass valve is provided to maintain a minimum flow for one pump operation. The PRW is the only water system which incorporates a minimum-flow re-circulation loop to assure air-free and cavitation-free pump operation. The primary pump is always running; its output is either used by the system or is returned to the storage tank through a re-circulation line.

9.4.12.3 Potable Water System (POT)

9.4.12.3.1 The Potable Water System (POT) supports the personnel needs throughout the TOCDF. The POT consists of a 19,500 gallon storage tank, three supply pumps, a hydro-pneumatic tank, associated controls, indicators, and the POT distribution system. The POT is chlorinated, softened water supplied from the water treatment system which enters the POT storage tank and is then pumped to the POT distribution system. Each supply pump is rated at 50% of system capacity. One pump is used as a spare. One pump normally operates, and the second pump operates during high flow demand. A bypass valve is provided to maintain a minimum flow for one pump operation.

9.4.12.4 Water Treatment System (WTS)

9.4.12.4.1 The Water Treatment System (WTS) consists of a below-ground bulk salt storage pit, a brine storage tank, two brine supply pumps, a regenerative brine water treatment system, a regenerative waste surge tank, associated controls, indicators, and the process water distribution system. Well water is softened by the WTS and supplied to the facility PRW and POT. The WTS is designed to provide 200 g.p.m. (140 g.p.m. normal operation) of

softened water to the TOCDF. The capacity of the storage tanks are sized to provide eight hours of storage for peak usage periods.

9.4.13 **Electrical Distribution and Emergency Power (EP) System Overview**

9.4.13.1 The electrical system consists of primary and secondary systems. The primary system consists of substation, switchgears, and diesel engine generators. The secondary system consists of 480-V switchgears, Motor Control Centers, distribution transformers, panelboards, and Uninterruptible Power Supply (UPS) systems. The electrical loads are divided into three categories: critical, essential, and utility:

9.4.13.1.1 *Critical Loads* are those required immediately following a power interruption. These loads are fed from UPS and battery packs (BP). Those requiring AC power are supplied from a solid-state UPS consisting of a battery/inverter system. Those requiring DC power are fed from a battery charger and storage battery or a special purpose pack furnished as an integral part of the load device.

9.4.13.1.2 *Essential Loads* are those that are essential for health and safety but can tolerate interruption for a few seconds or more. Essential loads are supplied from a standby generator system that can be started and fully loaded with 90 seconds.

9.4.13.1.3 *Utility Loads* are those not falling in the first two categories. The loss of these loads may result in a shutdown of the facilities and loss or production but will not endanger health or safety.

9.4.13.2 Primary Power System (PPS)

9.4.13.2.1 The 5-MVA, double-ended substation located near the TOCDF receives its primary power from the local electrical utility. This substation steps down line voltage from 46kV to 4.16kV and provides power to the TOCDF Primary Power System (PPS). Each transformer of the double-ended substation carries 50% of the TOCDF total loads.

9.4.13.3 Secondary Power System (SPS)

9.4.13.3.1 The Secondary Power Supply (SPS) consists of double-ended 480-V load center and switchgear, Motor Control Centers, and other equipment necessary to control and distribute power to TOCDF equipment. The SPS drops the voltage received from the PPS from 4,160-V to 480-V through a series of transformers. These transformers supply power to the switchgear and load centers. The switchgear and load centers contain circuit breakers that control power to the SPS Motor Control Centers, transformers, and UPS systems.

9.4.13.4 Uninterruptible Power Supply (UPS) System

9.4.13.4.1 The Uninterruptible Power Supply (UPS) provides power to electrical loads that cannot be interrupted for any length of time, such as instrument control systems, Control Room advisor, closed-circuit television, DPE radio system, warning lights (flashing), fire alarms, exit and emergency lights, and agent monitoring systems. The UPS system for the MDB uses offset battery racks in a separate room to facilitate access for maintenance and to accommodate cable connections to each battery. Positive room air circulation is

utilized to avoid hazardous concentrations of hydrogen gas. If utility and the emergency power is not available, the critical loads are powered by UPS batteries for no less than 90 minutes. A listing of the major systems and major equipment that remains operational under emergency power is provided in Table 9-4-1.

Table 9-4-1
EMERGENCY POWER LOAD SUMMARY

Power Load	Recommended Type of Supply	Load Classification
Agent annunciation system	BP[1]	Critical
Fire alarm	BP	Critical
DPE radio base station	BP[2]	Critical
ACAMS agent monitors	UPS	Critical
Emergency lighting in non-toxic areas	BP	Critical
Emergency lighting in toxic areas	BP[3]	Critical
Load center and electrical switchgear controls(SPS-LCTR-101 and -102)	UPS and/or Station Batteries	Critical
DAAMS	EP	Essential
Rotary Retort DFS drive	EP	Essential
DFS retort lube oil pump	EP	Essential
CCTV (selected areas)	UPS	Critical
Public address system	UPS or BP	Critical
Instrumentation (CON, PLCs, microprocessors)	UPS	Critical
Control room ventilation (air handling)	EP	Essential
UPS (power to)	EP	Essential
CAL Lab building, hood and filter units	EP	Essential
Life support system and compressor	EP	Essential
Air filtration system (includes air handling units)	EP	Essential
Instrument air compressor	EP	Essential
ACAMS agent monitor receptacles	EP	Essential
Battery room exhaust(HVC-FANX-102)	UPS	Critical
Fuel oil transfer pump air compressor, vaporizer	EP	Essential
Facility heating	EP	Essential
Decon supply pump and spare	EP	Essential
Stack lighting	EP	Essential
MPF/DUN/DFS/ECRfeed and exit, conveyors/doors	EP	Essential
DUN feed ram and charge door	EP	Essential
DFS/DUN secondary combustion air blowers	EP	Essential
MPF combustion air blower	EP	Essential
DFS/MPF/DUN emergency exhaust blowers	EP	Essential
DFS/MPF/DUN afterburners	EP	Essential
Quench brine pumps	EP	Essential
MPF/DFS Clean Liquor Pumps	EP	Essential
Control room air conditioning	EP	Essential
Process Water Supply	EP	Essential
Primary Cooling water	EP	Essential
Elevators/doors	EP	Essential
BRA Control Panels	EP	Essential
BRA Evaporator Packages	EP	Essential
BRA Drum Dryers	EP	Essential

Table 9-4-1 EMERGENCY POWER LOAD SUMMARY		
Power Load	**Recommended Type of Supply**	**Load Classification**
Notes: 1 BP = self-contained battery pack, EP = emergency power, UPS = solid-state uninterruptible power supply. 2 8-hour battery. 3 Battery packs are located in non-toxic areas.		

9.4.13.5 Emergency Generator (GEN) System

9.4.13.5.1 The Emergency Generator (GEN) system consists of diesel-driven electrical generation systems capable of providing backup power to all of the critical and essential loads in case of a power outage. Diesel-driven auxiliary electrical generation systems are provided to supply essential power to the MDB and associated facilities for a safe and orderly shutdown. This includes power for emergency lighting, instrumentation and control system, building ventilation system, and key process equipment such as pumps and blowers whereby a power loss could either create a safety hazard or major damage to equipment. An additional diesel-driven filter generator is tied to all nine filter units in the MDB HVAC filtering system to provide power for any two of the filter units during an outage as needed. Plant security lighting is supplied from a separate emergency generator.

9.4.14 **Fuel Gas System (Natural Gas and Liquefied Petroleum Gas)**

9.4.14.1 The furnaces at TOCDF are designed to burn natural gas as their primary fuel source. The natural gas is fed to the facility from the local utility company main supply line at a nominal pressure of 70 psig. The TOCDF regulates this pressure down to a header pressure of 35 psig.

9.4.14.2 Because the gas is obtained commercially through the local utility company, the TOCDF gas supply is subject to being diverted for domestic use. To minimize the upset caused by the loss of the primary fuel source, TOCDF has an alternative fuel source of Liquefied Petroleum Gas (LPG). The LPG is blended with air to form a mixture that yields the same heat value as natural gas.

9.4.14.3 The fuel gas system consists of commercially supplied natural gas, the LPG storage tank, the LPG transfer pump, dilution air compressor and dryer, LPG vaporizer, gas blender, associated controls, indicators, flare stack and fuel gas distribution system. A seismic-activated gas cutoff valve is provided to shut the gas supply to the equipment in the event of an earthquake.

9.4.15 **Fuel Oil System**

9.4.15.1 Fuel oil storage is provided to supply fuel to the emergency diesel-driven electrical generation system. The fuel oil system consists of a below ground storage tank with level sensor, switch panel, drop tube, and 30-inch manway. The tank is double wall with a rustproof fiberglass reservoir. A monitoring system provides for leak detection.

9.4.16 **Fire Detection and Protection Overview**

9.4.16.1 TOCDF is equipped with smoke and fire alarm sensors, control panels, and alarms to alert personnel that a fire has been detected. Manual pull stations are located at exit points throughout the site to allow personnel to report visual sighting of a fire. Pull stations, alarms, and hydrants are located throughout the site near the fuel storage area for the emergency generator, the LPG tank, the PMB filters, the fuel and bulk chemical unloading area, the MDB filter and stack area, the CON filter, the CHB loading dock, and the backup generator area. To extinguish fires, sprinkler systems using water are used in the UPA, ECR, and CHB; Halon systems are used in the CON and UPS rooms; and dry chemical systems are used in the TOX, and the induced-draft fan oil-lube systems located east of the PAS building. Wet-pipe sprinkler systems are used in the PMB. Smoke detectors are used in the PSB, certain areas of the PMB, and the Treaty Compliance Building (TCB). Portable fire extinguishers are provided for rapid response to small fires. In addition, a looped water distribution system services the site's fire hydrants.

9.4.16.2 Detection and Alarm

9.4.16.2.1 Fire detectors used in the various fire detection systems are one of the following types: photoelectric, combination Ultraviolet/Infrared (UV/IR), and thermal. Detectors in the furnace rooms and in areas subject to decon solution spray are high-temperature, rate-of-rise, and thermal types. Combination UV/IR detectors are provided for the ID fan oil-lube systems. All other areas are provided with photoelectric detectors.

9.4.16.2.2 If smoke or heat is sensed, an alarm is generated at the local panel and a signal goes to the main supervisory control panel in the CON. That panel passes the alarm to the ECF control panel. The ECF control panel reports the alarm to the DCD fire department through the radio communication system.

9.4.16.2.3 Rooms with Halon 1301 protection use cross-zoned photoelectric detectors. Rooms with dry-chemical extinguishing system protection use cross-zoned protection with thermal and photoelectric detectors in the TOX. When these detectors sense smoke or heat, they simultaneously activate an alarm throughout the MDB using local alarm horns and strobe lights and visual and audio alarms in the CON.

9.4.16.2.4 If a worker observes a fire and no alarm has sounded, that person should pull the nearest manual pull station. When a fire occurs inside of the double fence, the Plant Shift Manager must decide whether the fire can be extinguished without peril to personnel or equipment. A small fire that has no chance of spreading further if promptly extinguished can be stopped by using existing resources and personnel.

9.4.16.3 Automatic Sprinkler System

9.4.16.3.1 Dry-type, hydraulically designed automatic sprinkler systems are located in the CHB and the UPA. The systems are automatically triggered by thermal fire detectors in these areas.

9.4.16.3.2 In the event of a fire, the sprinkler system dry pipes are charged with water by the activation of a deluge valve triggered by thermal detectors in the area. Sprinkler heads

over the fire are then thermally activated by melting a fusible link.[13] Water is released through open sprinkler heads to extinguish the fire. If the fire is very small and remotely located from explosives, it could be fought effectively with a hand-held extinguisher. In the event of a large fire or if the fire is detected in the UPA, the sprinkler system automatically activates. If it fails to start automatically, operators in the UPA and CHB UPA must manually activate the sprinkler deluge valve.

9.4.16.4 Halon (HAL) Systems

9.4.16.4.1 Automatic total flooding Halon 1301 (HAL) systems protect the CON and UPS systems. Halon is used to extinguish fires in these rooms since it does not cause damage to electrical equipment. The CON rooms have raised computer-room floors, so these underfloor spaces are also protected by Halon discharge nozzles. The systems are actuated by cross-zoned, photoelectric smoke detectors in two stages; if a detector in only one stage is activated, a warning signal (flashing and audible) is generated. The automatic control leading to the HAL discharge is actuated only when detectors in two different zones are activated; the second alarm sets the system into a 30 second time delay mode. The time delay allows operators to push an abort switch, which inhibits the HAL discharge as long as the button is held down. This allows personnel to determine the seriousness of the fire or if it is a false alarm, and it allows evacuation of affected personnel from the fire area if necessary.

9.4.16.4.2 If the fire is small and can be fought safely, operators may abort the automatic release and use the manual Halon fire extinguishers located in the CON and UPS rooms to extinguish the fire. If the fire is large, and the operator does not choose to abort the discharge, the second alarm sounds and the HAL is discharged ten seconds after the abort button is released. If the automatic discharge fails, the manual discharge switch may be used. The manual discharge switch overrides the time delay and abort switches in the system.

9.4.16.5 ECR High Speed Deluge System

9.4.16.5.1 The ECR High Speed Deluge System is located in the ECRs and installed on the feed conveyors. Each system consists of three UV flame detectors, three rapid response deluge valves, and a manual pull station located in each ECR. When a flame is detected on the feed gate, the UV sensor sends a signal to the Rapid Response Deluge control panel, which in turn actuates the High Speed Deluge Solenoid Valve and sends an alarm to the control panel. The detection of a flame will operate the High Speed Solenoid in ≤49 milliseconds. The system is activated and ready to respond during campaigns, which require the use of the RSM and BSR.

9.4.16.6 Portable Fire Extinguishers

9.4.16.6.1 Portable fire extinguishers are wall mounted throughout the TOCDF (except for A and B air categories in the MDB), and are used in the event of a small fire that has been determined to be one that can be handled safely and kept under control. Two types of portable fire extinguishers are available depending on the type of fire expected in the

[13] The sprinkler system uses sprinklers with fusible alloy sealed into a bronze center strut by a stainless steel ball. When heat from a fire causes the alloy to melt, the ball is forced upward into the center strut allowing a release of the pressurized firewater.

immediate area; Halon 1211 and multipurpose dry chemical. Both types are compatible with chemical agent and decontamination fluids. All personnel are authorized to use portable fire extinguishers to extinguish small fires and are familiar with extinguisher locations.

9.4.16.6.2 Halon 1211 fire extinguishers are rated 2A:60B:C and placed in areas where electrical fires or electrical hazards are expected. The contents of these extinguishers are stored as a liquid under pressure and expelled as a liquid.

9.4.16.6.3 In areas where electrical fires or electrical hazards are not expected, multipurpose dry-chemical fire extinguishers are sufficient. Multipurpose dry chemical extinguishers for Class A, B, and C, and rated 20A:120B:C are mounted in such areas.

9.4.16.7 Dry-Chemical System

9.4.16.7.1 Five dry-chemical type fire suppression systems protect specific process zones. Four systems are located on the east side of the PAS platform east of the PAS building and provide protection to the four lube-oil systems of the four PAS induced-draft fans. A fifth system provides protection to the upper and lower levels of the TOX.

9.4.17 Hydraulic Power and Distribution System

9.4.17.1 The hydraulic power system supplies power to the hydraulically operated equipment in the MDB. The hydraulic power system consists of six Hydraulic Power Units (HYPUs), eighteen hydraulic control valve manifolds, interconnecting lines, and all associated hydraulic and electrical components. Each HYPU is composed of one or two hydraulic pumps driven by an electric motor, a hydraulic fluid reservoir, one to five hydraulic fluid bladder-type accumulators, fluid-monitoring instrumentation, and associated piping and valving. The hydraulic fluid is stored above pumps in reservoirs of 100 to 300 gallon capacity each.

9.5 EMERGENCY RESPONSE ORGANIZATION [R315-8-4.3(c), R315-8-4.6; 29 CFR 1910.120]

9.5.1 Overview

9.5.1.1 TOCDF response efforts are commanded and controlled by the Incident Commander (IC)[14]. The IC is an employee of EG&G, operator of TOCDF. Oversight of emergency response efforts is provided by the TOCDF General Manager, also an EG&G employee. In an emergency that is declared a Chemical Accident/Incident Response and Assistance (CAIRA) event, response command and control is ceded to the DCD Commander operating from the installation Emergency Operations Center (EOC). During CAIRA events, the Chemical Accident/Incident Control Officer (CAICO) has been designated by the DCD Commander to direct emergency operations. In a CAIRA event, the TOCDF IC will fulfill the function of the Assistant Chemical Accident/Incident Control Officer (ACAICO) under the direction of the CAICO.

[14] To be consistent with the TOCDF Emergency Response Plan, the title of Incident Commander (IC) is used instead of Emergency Coordinator.

9.5.1.2 TOCDF's Emergency Response Organization (ERO) is composed of three distinct but coordinated groups of emergency personnel: Scene Responders, the Control Room, and the Management Advisory Team (MAT). Each group has its own response role and focus, each complementing the other. Group composition and relationships are illustrated in Figure 9-5-1. The basic responsibilities of each of these three groups are discussed below.

9.5.1.3 The DCD Emergency Response Organization for a chemical event is shown in Figure 9-5-2. During chemical events, TOCDF emergency response efforts are under the direction of the DCD Commander at the DCD EOC. Direct interface is provided through the DCD CAICO at the EOC.

9.5.2 **Scene Responders**

9.5.2.1 The Scene Responders are comprised of EG&G and Battelle employees with the expertise to quickly respond to the scene of an event, assess the situation, and promptly implement corrective and protective measures. This group is modular in composition; therefore, responders can be mobilized based on need. The organizational structure of Scene Responders is patterned after the unified command and control concepts of the Incident Command System as specified in OSHA Regulation 29 CFR 1910.120. Scene Responders are led by the IC who directs and controls emergency response activities at TOCDF. Response teams are activated by the IC, and the IC will establish the response objectives. In a chemical agent event, the DCD CAICO will establish response objectives and inform the IC. The responsibilities of each scene response leader and advisor are as follows:

9.5.2.2 Incident Commander (IC)/Emergency Coordinator

9.5.2.2.1 The Incident Commander (IC)/Emergency Coordinator during an emergency at TOCDF is the Plant Shift Manager. The alternate designee IC is the Operations Shift Supervisor or personnel certified as either the Plant Shift Manager or the Operations Shift Supervisor. The IC is responsible for directing TOCDF emergency response operations. During an emergency event, the IC is responsible only to the EG&G General Manager or his designee as the head of the MAT. The IC will receive notification of an event in the Control Room. The IC will determine whether the event is an incidental event or an emergency. If the event is an emergency, the IC will decide personnel protective actions and determine which elements of the Emergency Response Organization (ERO) to activate. The IC will then turn over operation of the plant to the Operations Shift Supervisor and assume the role of IC for the duration of the emergency.

9.5.2.2.2 The IC will:

9.5.2.2.2.1 ensure prompt notification of an emergency to pre-specified organizations.

9.5.2.2.2.2 ensure effective mobilization of TOCDF and outside responders and resources.

9.5.2.2.2.3 ensure the safety of site personnel and responders.

9.5.2.2.2.4 ensure personnel and responder accountability is maintained.

9.5.2.2.2.5 establish response strategies, objectives, and priorities.

9.5.2.2.2.6 If appropriate, evacuate the facility (see Section 9.10.3.4).

9.5.2.2.2.7 Make the necessary notifications (see Section 9.7.1).

9.5.2.2.2.8 Mobilize personnel and ensures the proper PPE is provided.

9.5.2.2.2.9 Stop flow into the tank system and inspect to determine the cause of the release (see R315-8-10 [40 CFR 264.196(a)], Sections 9.7.9 through 9.7.11, and Attachment 16 (Tank Systems) of this Permit regarding spills and leakage from tanks, containers, and other regulated units).

9.5.2.2.2.9.1 Shuts off pumps and closes inlet valves as appropriate.

9.5.2.2.2.9.2 If a valve, pipe, hose, or pump is leaking or spilling, isolates this equipment by closing the appropriate valves.

9.5.2.2.2.10 Removes sufficient waste from the tank system within 24 hours after detection of leak to reach a level where further release is prevented and tank inspection and repair can be performed (see R315-8-10 [40 CFR 264.196(b)], Sections 9.7.9 through 9.7.11, and Attachment 16 (Tanks Systems) of this Permit regarding spills and leakage from tanks, containers, and other regulated units).

9.5.2.2.2.10.1 Transfers the contents to other tank(s), container(s), or an appropriate treatment process.

9.5.2.2.2.10.2 As appropriate, removes the tank or component in question from service until permanent repairs can be made.

9.5.2.2.2.11 Conducts a visual inspection of the release and prevents further migration and removes and properly disposes of any visible contamination (see R315-8-10 [40 CFR 264.196(c)], Sections 9.7.9 through 9.7.11, and Attachment 16 (Tank Systems) of this Permit regarding spills and leakage from tanks, containers, and other regulated units).

9.5.2.2.2.11.1 Assembles the appropriate response equipment (i.e., absorbent material, empty drums, overpacks, shovels, brooms, pumps, vacuum trucks, etc.)

9.5.2.2.2.11.2 Determines the most appropriate containment and clean-up methods. Implements appropriate containment procedures (i.e., earthen dikes, etc.).

9.5.2.2.2.11.3 Initiates clean-up and, directly or through communication with spill response personnel, monitors the clean-up of the released material. Clean-up will be performed as soon as possible, following detection of the release, to minimize any associated effects on human health or the environment. Releases to secondary containment systems will be cleaned-up within 24 hours of detection. The released material will be transferred (e.g., via shovel, pump, vacuum truck, absorbent, earth moving equipment, etc.) to a container(s) or other tank(s) in good condition or to an appropriate treatment process.

9.5.2.2.2.11.4 If the origin (and therefore the identity) of the released material is unknown, the IC ensures that a sample of the released material and/or the clean-up residues/solutions is obtained and arranges laboratory analysis.

9.5.2.2.2.11.5 Ensures that the released material, that is treated or has been placed into a container(s) or tank(s), is managed in accordance with this Permit (i.e., stored in permitted container storage area(s), stored in permitted tank(s), shipped offsite, thermally treated, etc.).

9.5.2.2.2.11.6 Ensures that, after clean-up is complete, the secondary containment system and all equipment and PPE used during clean-up is decontaminated as necessary and PPE and absorbent materials are restocked as appropriate.

9.5.2.2.2.12 Develops and submits the appropriate reports required by R315-8-10 [40 CFR 264.196(d)] and Section 9.11 of this Contingency Plan.

9.5.2.2.2.13 As appropriate, repairs or closes the tank system (see R315-8-10 [40 CFR 264.196(e)]). The repair methodology specified in the appropriate tank system design/fabrication standards (i.e., ASME Section VIII Division I, API 650, etc.) will be followed. Attachment 10 (Closure Plan) of this Permit contains details regarding tank system closure. See Sections 9.7.9 through 9.7.11, and Attachment 16 (Tank Systems) of this Permit regarding spills and leakage from tanks, containers, and other regulated units.

9.5.2.2.2.13.1 If the tank system is repaired and the repair was extensive, the IC or his designee obtains and submits a certification by an independent, qualified registered professional engineer that the repaired system is capable of handling hazardous waste for the intended life of the system (see R315-8-10 [40 CFR 264.196(e)]).

9.5.2.2.3 With advice and input from ERO members, the IC will:

9.5.2.2.3.1 assess the emergency and its consequences.

9.5.2.2.3.2 establish a hazard zone and protective actions.

9.5.2.2.3.3 develop a corrective action plan.

9.5.2.2.4 The IC will integrate non-TOCDF responders such as firefighting and security services and ensure that all parties are fully informed of events and actions occurring at the scene. Upon termination of an emergency, the IC will make reentry and recovery recommendations and assist with recovery operations.

9.5.2.2.5 The IC has the authority to commit all TOCDF resources necessary to adequately implement any response actions.

9.5.2.2.6 Table 9-5-1 identifies the ICs for the TOCDF site.

Table 9-5-1 EMERGENCY COORDINATORS Incident Commanders			
Position	**Name and Address**	**Work Phone**	**Home Phone**
PLANT SHIFT MANAGER	JEFFERY M. EARLS 774 West Sundown Lane Tooele, Utah 84008	(435) 833-7721	(435) 882-8276
	JIM HEBERT 9173 South 3140 West West Jordan, Utah 84008	(435) 833-7735	(801) 568-5108
	BURK LEATHAM 814 Lakeview Stansbury, Utah 84074	(435) 833 7700	(435) 882-1911
	JAY IVEY 388 South 4th Stree Tooele, Utah 84074	(435) 833-7764	(435) 882-0681
	ROBERT PETERSEN 5425 North Ardennes Way Stansbury, Utah 84074	(435) 833-7700	(435) 833-0808
	SCOTT SORENSON 169 Millcreek Way Tooele, Utah 84074	(435) 833-7735	(435) 882-4347

9.5.2.3 Scene Control Officer (SCO)

9.5.2.3.1 Immediately upon activation of any scene responder, the Scene Control Officer (SCO) will report directly to the scene, take control of the activities of first responders, and then coordinate the actions of all response teams upon their arrival. The SCO will conduct evacuation of all personnel from the hazard zone; coordinate first responder efforts; control the spread of contamination; establish hazard zone perimeter control; determine the appropriate level of PPE for response teams; establish a staging area for response teams; designate the Personnel Decontamination Station (PDS) location; inform response team leaders of the mission objectives and priorities; assess personnel and equipment requirements; ensure responder accountability is maintained; and coordinate the evacuation of emergency responders from the site if necessary. The SCO will keep the IC fully informed of scene events and actions, and assure the safety and effective coordination of assembled response teams. The SCO will take direction from and report to the IC.

9.5.2.4 Safety Advisor

9.5.2.4.1 The Safety Advisor is responsible for identifying and evaluating hazards, and ensuring the safety of emergency operations. The Safety Advisor position is filled by the shift Safety Representative. Immediately upon activation of any scene responder, the Safety Advisor will report directly to the scene to provide safety assessment and advice. When activities are judged by the Safety Advisor to be an IDLH condition and/or to involve an imminent danger condition, the Safety Advisor has the authority to alter, suspend, or terminate those activities and will inform the SCO and/or IC of any actions needed to correct these hazards at the emergency scene. The Safety Advisor will ensure the

appropriate level of PPE is worn by responders; ensure pre-entry safety checks are performed; ensure proper surveillance of responders inside the hazard zone; and assess the adequacy of the hazard zone perimeter and protective actions implemented.

9.5.2.5 Environmental Advisor

9.5.2.5.1 The Environmental Advisor is responsible for assessing the environmental consequences of a hazardous material event; providing guidance to the SCO and/or IC on contamination control, spill survey, and clean-up measures; and arranging for environmental sampling and analysis. The Environmental Advisor position is filled by the shift Environmental Representative. Immediately upon notification of any hazardous material release, the Environmental Advisor will report directly to the scene to assess environmental impacts and provide advice on environmental matters. The Environmental Advisor will provide advice and methods for keeping a spill and decontamination activities confined to initially affected areas (under engineering controls, inside a building, etc.) to the extent reasonable. The Environmental Advisor will provide technical advice in the areas of spill cleanup, property decontamination, and hazardous waste disposal.

9.5.2.6 Maintenance Superintendent

9.5.2.6.1 The Maintenance Superintendent will perform duties as directed in an emergency.

9.5.2.7 HAZMAT Team Leader (HTL)

9.5.2.7.1 The HAZMAT Team Leader (HTL) is responsible for directing activities of the HAZMAT Team. The HTL will obtain mission objectives from the SCO; assess the risks; develop a HAZMAT entry plan; prescribe safety measures to be taken; ensure proper equipment is used; brief entry and backup teams on the mission; perform entry readiness checks; dispatch the entry teams; provide constant surveillance and guidance during entry operations; direct portable air sampling for oxygen, combustible gas, and toxic vapor levels as required; ensure contamination control and personnel decontamination procedures are followed; maintain accountability of HAZMAT personnel; and obtain any needed support for entry teams. The HTL will take direction from and report to the SCO.

9.5.2.8 Decon Team Leader (DTL)

9.5.2.8.1 The Decon Team Leader (DTL) is responsible for directing activities of the Decon Team deployed to the scene. The DTL manages the setup and operation of the Personnel Decontamination Station (PDS) at the scene. The Medical Clinician in Charge manages the setup and operation of the PDS at the Medical Clinic. The DTL will obtain the PDS location from the SCO; determine the extent of PDS setup needed; ensure the proper decon solution and equipment are available; assign personnel and perform readiness checks; direct the processing of contaminated personnel through the decon line; ensure the PDS remains outside the hazard zone; minimize secondary contamination; monitor personnel at the PDS for signs of illness/exposure; maintain accountability of Decon Team personnel; obtain any needed support for decon activities; direct PDS shutdown and cleanup; and ensure proper PDS waste disposal. The DTL will take direction from and report to the SCO.

9.5.2.9 Paramedic Team Leader (PTL)

9.5.2.9.1 The Paramedic Team Leader (PTL) is responsible for directing activities of the Paramedic Team and all outside medical teams at the scene. The PTL will obtain mission objectives from the SCO; ensure proper PPE for medical personnel; assess the medical needs of the event; establish a triage and treatment area at the scene as required; advise other team leaders on medical care and patient processing administered by their personnel (HAZMAT entrants, deconners, etc.); ensure patients have been at least gross decontaminated prior to transport; administer medical treatment; assess the need for further medical assistance and transportation; ensure medical support for responders at the scene; and obtain medical support through the Medical Clinician In Charge (MCIC) as needed. The PTL will take direction from and report to the SCO for scene control matters and report to the MCIC for medical treatment matters.

9.5.2.10 Medical Clinician In Charge (MCIC)

9.5.2.10.1 The Medical Clinician In Charge (MCIC) has overall responsibility for emergency medical response. The MCIC is the most highly-trained medical person at the TOCDF Medical Clinic at the time of an emergency. The MCIC is responsible for dispatching medical transport vehicles and paramedics to the scene; authorizing administration of additional nerve agent antidote injections as required (may also be authorized by paramedics); deciding if emergency medical treatment can and should be provided prior to patient gross decontamination (i.e., authorizing a paramedic to cross the hotline to administer medical treatment); providing casualty triage and treatment instructions to paramedics on the scene; assuring the Clinic is staffed and prepared to receive casualties; ensuring casualties have been adequately decontaminated prior to treatment in the Clinic; managing personnel decontamination at the Clinic; performing and directing emergency triage and treatment of casualties arriving at the Clinic; requesting outside medical support directly from the DCD EOC keeping the DCD EOC and TOCDF Control Room updated on casualty status and medical response; directing activities of all outside medical teams at the Clinic; and recording and tracking treatment provided to casualties at the scene, at the Clinic, and in support facilities.

9.5.2.11 Rescue Team Leader (RTL)

9.5.2.11.1 The Rescue Team Leader is responsible for directing activities of the Rescue Team in performing confined space/technical rescue. The RTL and Rescue Team personnel are also members of the HAZMAT Team. If the event involves HAZMAT response and either confined space or technical rescue, the RTL will defer to the HAZMAT Team Leader for matters involving HAZMAT operations (PPE, contamination control, personnel decontamination, etc.). The RTL will obtain mission objectives from the SCO; assess the risks; develop a rescue plan; prescribe safety measures to be taken; verify that no explosive atmosphere exits prior to any confined space entry; ensure proper PPE and rigging systems for the rescue; brief rescue and backup teams on the mission; perform rescue readiness checks; dispatch the rescue teams; provide constant surveillance and guidance during the extraction; maintain accountability of rescue personnel; and obtain any needed support for rescue teams. The RTL will take direction from and report to the SCO.

9.5.2.12 PMCD Shift Engineer

9.5.2.12.1 The PMCD Shift Engineer will provide technical advice and guidance to the IC and Control Room personnel, and perform PMCD notifications. During an off-hours emergency involving Management Advisory Team (MAT) mobilization, the PMCD Shift Engineer will dispatch the PMCD Shift Quality Assurance Specialist to the DCD EOC to act as a TOCDF liaison and technical advisor pending MAT arrival.

9.5.3 **Control Room**

9.5.3.1 The Control Room for TOCDF plant operations is located in the MDB. The Control Room is designed with engineering controls to isolate it from the effects of potential hazards. It contains centralized monitoring capability and emergency communications systems including the 911 emergency reporting line, the site-wide public address system for broadcast of emergency notification and instructions, and base radio stations for emergency communications. It also provides centralized control and monitoring of critical plant systems and equipment. The Control Room is staffed on a 24-hour basis. The Control Room, comprised of shift Control Room Operators, is directed by the Plant Shift Manager during normal shift operations. The Plant Shift Manager will delegate direction of the Control Room to the Control Room Supervisor in an emergency event. The Control Room Supervisor will then be the Control Room group leader and be responsible for emergency notification; protective action instructions; activation of the Emergency Response Organization; emergency communications; and monitoring and controlling plant processes, systems, and equipment to assure personnel safety and to mitigate damage to facilities and equipment.

9.5.3.2 Assistant Incident Commander (AIC)/Alternate Emergency Coordinator[15]

9.5.3.2.1 The Operations Shift Supervisor is the Assistant IC (AIC). The Operations Shift Supervisor may be designated the IC in any event by the Plant Shift Manager or will automatically assume the role of IC in the Plant Shift Manager's absence. If the Operations Shift Supervisor is designated the IC, he will then assume command of all TOCDF emergency response operations and report to the General Manager for the duration of the emergency. If the Operations Shift Supervisor assumes the role of IC, he will assign a certified Operator to assume the Operations Shift Supervisor's duties.

9.5.3.2.2 The Operations Shift Supervisor is responsible for monitoring emergency alarms and communication devices; providing initial emergency instructions and guidance to first responders at the scene; rapidly notifying required emergency services such as firefighting, medical, and security; alerting and notifying affected personnel of the emergency and protective actions; deploying responders to the scene and emergency facilities such as the Clinic and DCD EOC; promptly notifying DCD and TOCDF management; establishing a Control Room communications and information center for TOCDF response; initiating rapid entry and exit procedures for areas under surety controls; tracking accountability of site personnel and responders; acquiring resources to support scene operations; and documenting and tracking emergency events and actions. The above Operations Shift Supervisor responsibilities are carried out by the Control

[15] To be consistent with the TOCDF Emergency Response Plan, the title of Alternate Incident Commander (AIC) is used instead of Alternate Emergency Coordinator.

Room Operators, who are pre-assigned to certain emergency tasks at the start of their shift in order to maximize response effectiveness.

9.5.3.2.3 In addition, the Operations Shift Supervisor will assess any malfunction or damage to plant systems, equipment, or facilities; initiate remedial actions such as shutdown, reroute, or repair; identify hazardous locations; anticipate emergency impact on associated systems or equipment; take action to mitigate damage; and provide technical advice and cautions for response teams working on plant systems.

9.5.3.2.4 During an Emergency, the AIC in consultation with the PMCD Shift Engineer, if available, has the authority to commit all TOCDF resources necessary to adequately implement any response actions.

9.5.3.2.5 Table 9-5-2 identifies the AICs for the TOCDF site. Home addresses and telephone numbers are not necessary since an AIC is at the facility 24 hours per day, seven days per week.

Table 9-2-2
ALTERNATE EMERGENCY COORDINATORS

Position	Name and Address	Work Phone	Home Phone
OPEARTIONS SUPERVISOR	PATRICK K BAKER 518 Terrace Lane Tooele, Utah 84074	(435) 833-7782	(435) 882-5267
	JAMES BREWER 167 South McMichael Grantsville, Utah 84029	(435) 833-7700	(435) 884-6768
	PATRICK C. CANTWELL 479 East 500 North Tooele, Utah 84074	(435) 833 7724	(435) 882 – 8485
	SCOTT HANSEN 5187 South Clover Lane Murray, Utah 84123	(435) 833-7555	(801) 266-1002
	IRV HILLMAN 977 Harker Road Vernon, Utah 84080	(435) 833-7782	(435) 839-3477
	RALPH P. MAESTAS 484 South 1st West Tooele, Utah 84074	(435) 833-7724	(435) 882-6350
	MACE MCKINNEY 1666 North 17790 West Fairfield, Utah 84013	(435) 833-7700	(801) 766-0185
	ELDON PERKINS 10360 Hwy 89 North Evanston, Wyoming 82930	(435) 833-7782	(307) 789-1005
	ROBERT PETERSEN 619 East 180 North Tooele, Utah 84074	(435) 833-7700	(435) 833-9754

Table 9-2-2 ALTERNATE EMERGENCY COORDINATORS			
Position	**Name and Address**	**Work Phone**	**Home Phone**
	ROBERT RALSTON 202 West 1900 North Tooele, Utah 84074	(435) 833-7559	(435) 843-0745
	RICH RENZELLO 87 North Terance Drive Eureka, Utah 84628	(435) 833-7782	(435) 433-6397
	BRIAN SCOTT 283 North 630 East Tooele, Utah 84074	(435) 833-7700	(435) 882-8016
	SCOTT VONHATTEN 720 North 1st West Tooele, Utah 84074	(435) 833-7760	(435) 882-4667
	BARRY WILLIAMS 1147 Southwest Drive Tooele, Utah 84074	(435) 833-7559	(435) 843-1361
	TROY H. WORTHEN 187 North Main Alpine, Utah 84008	(435) 833-7724	(801) 756-8129

9.5.3.3 Accountability Coordinator

9.5.3.3.1 The Accountability Coordinator is responsible for managing muster area operations during an emergency requiring site-wide evacuation and coordinating personnel accountability during an emergency involving site-wide in-place sheltering. Responder accountability such as HAZMAT, decon, and medical personnel is coordinated by the SCO at the event scene. During site-wide evacuation, the Accountability Coordinator will manage muster area operations; report building sweep and personnel accountability results to the Control Room; maintain evacuee control and personnel accountability; transmit emergency information between the Control Room and evacuees; and ensure the safety of assembled evacuees. During site-wide in-place sheltering, the Accountability Coordinator will report personnel accountability results to Control Room. The Accountability Coordinator will take direction from and report to the Operations Shift Supervisor.

9.5.3.4 Sweepers

9.5.3.4.1 Sweepers are responsible for assuring that all buildings and areas under an evacuation directive are clear of personnel and reporting results to the appropriate accountability lead. Sweepers are designated by building. Sweepers will perform their duties at the time of evacuation. Sweepers are the last persons out of their assigned building and will ensure the building is clear of personnel. The Sweeper will not enter an area of danger. If there is a hazardous condition, the Sweeper will report the area of the building that could not be swept. The IC may arrange for the search and rescue of personnel thought to be in the area of danger. The Sweeper will normally report building sweep results to the Accountability Coordinator.

9.5.4 **Management Advisory Team (MAT)**

9.5.4.1 Pre-designated responsibilities have been assigned to each member of the Management Advisory Team (MAT). The responsibilities for each MAT position are as follows:

9.5.4.2 General Manager

9.5.4.2.1 During an emergency, the General Manager is responsible for the health and safety of all personnel at TOCDF and for the overall direction of the TOCDF emergency response effort. The General Manager will ensure prompt, appropriate, and effective implementation of this plan in order to minimize the consequences of an emergency. The General Manager will review emergency response strategies, objectives, and priorities for appropriateness; notify EG&G and Battelle corporate headquarters after DCD Commander concurrence; track casualty status and care; ensure proper notification to families of EG&G and Battelle casualties after DCD Commander concurrence; support DCD public affairs activities; ensure EG&G and Battelle families are kept informed of personnel status; review news media reports for accuracy; monitor ongoing TOCDF response actions; determine the need for additional personnel to support the MAT; terminate TOCDF emergency operations when appropriate; initiate an immediate critique of response effectiveness; and initiate coordinated recovery planning and operations. The General Manager will also work with and advise the DCD EOC Director of Operations on TOCDF issues.

9.5.4.3 PMCD Project Manager

9.5.4.3.1 The PMCD Project Manager is responsible for monitoring overall TOCDF response effectiveness, ensuring coordinated interface between TOCDF and outside organizations, and providing technical and facility design basis information. The PMCD Project Manager will ensure PMCD-E is notified and kept informed of emergency events and activities; confirm notification of offsite agencies required by regulation or administrative agreement; ensure effective coordination between TOCDF and outside organizations; ensure emergency terms of TOCDF Memoranda of Understanding (MOUs) are upheld; assist in developing solutions to response problems; mobilize PMCD, SAIC, and other government resources as needed to support MAT activities; ensure proper notification to families of any government casualties after DCD Commander concurrence; coordinate TOCDF public affairs activities and ensure integration with DCD efforts; ensure government families are kept informed of personnel status; review and approve TOCDF-related press releases and briefing sheets; and review news media reports for accuracy. The PMCD Project Manager will also work with and advise the DCD EOC Director of Operations on TOCDF issues.

9.5.4.4 Deputy General Managers

9.5.4.4.1 The Deputy General Managers are responsible for providing MAT support to TOCDF and DCD, facilitating information flow and resource support between TOCDF and DCD and advising DCD EOC staff on plant operations and technical matters. The Deputy General Managers will assist with MAT mobilization and operations; represent TOCDF operational needs and interests at the EOC; advise EOC staff on plant systems and other technical matters; track casualty status and care; closely monitor ongoing TOCDF response activities including responder actions and personnel protective actions; assist the Control Room in developing solutions to response problems; identify and coordinate

delivery of MAT support; mobilize additional resources to support the MAT as required; arrange support for extended response operations such as food and relief; assist the EG&G General Manager in determining emergency operations termination; and assist the EG&G General Manager in implementing recovery operations. The Deputy General Managers will work with and advise the DCD CAICO on TOCDF issues.

9.5.4.4.2 The Deputy General Managers delegate reviews and amendments to the Contingency Plan, if necessary, whenever: (a) The facility RCRA permit is revised; (b) The Contingency Plan fails in an emergency in any way; (c) The facility changes in its design, construction, operation, maintenance, or other circumstances in such a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency; (d) The list of Incident Commanders changes; or (e) The list of emergency equipment changes.

9.5.4.5 PMCD Shift Quality Assurance Specialist (QAS)

9.5.4.5.1 During an off-hours emergency involving Management Advisory Team (MAT) mobilization, the PMCD Shift Engineer will immediately dispatch the PMCD Shift Quality Assurance Specialist (QAS) to the DCD EOC to serve as liaison between DCD and TOCDF and a technical advisor to EOC staff until the MAT arrives at the EOC. The QAS will facilitate information flow and resource support between TOCDF and DCD; represent TOCDF response needs and interests at the EOC; and advise EOC staff on plant systems and other technical matters. The QAS will work with and advise the DCD CAICO (or alternate) on TOCDF issues until the MAT arrives. The QAS will then turn over his responsibilities to the EG&G General Manager and take direction from the PMCD Project Manager.

9.5.4.6 The MAT is comprised of the EG&G General Manager, the EG&G Deputy General Manager for Plant Operations, the EG&G Deputy General Manager for Risk Management, and the PMCD Project Manager (or their alternates). The EG&G General Manager is ultimately responsible for the overall TOCDF emergency response effort and serves as the head of the MAT. The PMCD Project Manager provides a government oversight function. The Deputy General Managers provide technical expertise to DCD EOC personnel relative to TOCDF operations. In a CAIRA event in which the DCD Commander assumes responsibility for the overall response, MAT members will serve as liaisons and technical advisors to DCD EOC staff and coordinate closely with the EOC Director of Operations and the CAICO as necessary.

9.5.4.7 The MAT serves as an information and advisory group to DCD EOC staff and represents TOCDF needs and interests at the EOC. The MAT will confirm completion of required notifications; ensure effective information flow between TOCDF emergency facilities and the EOC; advise EOC staff on plant technical matters; review emergency response strategies, objectives, and priorities; monitor TOCDF response and provide recommendations as appropriate; ensure adequate resource support to TOCDF; track casualty status and care; complete corporate and family notifications; assist the Control Room in solving operational problems; support DCD public affairs activities; arrange support for extended operations such as food and relief; terminate TOCDF emergency operations; and initiate coordinated recovery planning and operations. The MAT will not

direct actions at the scene or at any emergency facilities but will ensure the overall plan of action is appropriate and that primary objectives are kept in focus.

9.5.4.8 The IC makes the decision to activate the MAT. The IC will automatically mobilize the MAT whenever DCD activates its EOC due to an event at TOCDF. For TOCDF purposes, the EOC is considered activated whenever the CAICO is directing CAIRA operations from it. The IC, at his discretion, may mobilize the MAT to the EOC or another location based on other considerations. During normal working hours MAT members are mobilized from work locations near the EOC. Off-hours, MAT members are mobilized from home locations some distance away, in which case the onsite PMCD Shift Quality Assurance Specialist are dispatched to the EOC to provide plant technical information and represent TOCDF needs until the MAT arrives.

9.5.4.9 Upon arrival, the three TOCDF senior managers who comprise the MAT will augment and integrate into EOC staffing as required. As the event develops, additional TOCDF expertise may be required at the EOC or some other location, e.g., plant systems specialists or special working groups may be needed to analyze specific problems and recommend solutions. The activation of additional TOCDF personnel in support of the MAT is at the discretion of the General Manager.

9.5.4.10 During an emergency, the MAT will continue to administer normal work functions not impacted by the emergency.

9.6 IMPLEMENTATION [R315-8-4.2(b)]

9.6.1 The purpose of this section is to establish guidelines for the orderly reporting and handling of emergency situations which occur or could foreseeably develop at the TOCDF site. Due to the nature of materials handled at TOCDF, this plan may be implemented as a precautionary measure during routine operations. This Contingency Plan is implemented immediately in the event that a fire, explosion, or agent or non-agent release occur which could threaten human health or the environment.

9.6.2 Fire or Explosion Incident

9.6.2.1 For the purpose of this section, fire means a fire in a chemical agent, oil, or hazardous material/waste storage, transportation, treatment, or work area. Explosion means an explosion in a chemical agent, oil, or hazardous material/waste storage, transportation, treatment, or work area.

9.6.2.2 The Contingency Plan is implemented due to fire or explosion if:

9.6.2.2.1 The event causes the release of toxic fumes.

9.6.2.2.2 The fire spreads and could possibly ignite materials at other locations on site, or could cause heat-induced leaks or explosions.

9.6.2.2.3 The fire could possibly spread to offsite locations.

9.6.2.2.4 The use of fire suppressant, either chemicals or water, could result in contaminated runoff.

9.6.2.2.5 The explosion has or could:

9.6.2.2.5.1 Result in danger from flying fragments or shock waves,

9.6.2.2.5.2 Ignite other materials at the facility,

9.6.2.2.5.3 Release toxic materials.

9.6.2.2.6 The fire or explosion endangers human health or the environment for any other reason.

9.6.2.3 In the event that a fire and/or explosion has occurred, follow Section 9.7.1.

9.6.3 **Agent or Non-Agent Release**

9.6.3.1 For the purpose of this plan, agent release means the release of chemical agent to the environment outside of closed systems, facilities, or devices (e.g., lab hoods, glove box, munitions and bulk containers) exceeding or predicted to exceed the agent exposure limits listed in Table 9-6-1. This includes release of any nature resulting in personnel exhibiting clinical signs or symptoms of agent exposure. Any potential release exceeding the agent exposure limits from a stack, which cannot be confirmed or non-confirmed within 24 hours, is also agent release. Non-agent release means release of oil, hazardous material/waste or hazardous waste constituents. Release means any unplanned sudden or non-sudden release to air, soil, or surface water at the facility.

Table 9-6-1
AGENT EXPOSURE LIMITS AND AGENT STACK LIMITS (mg/m^3)

	GB	VX	H/HD/HT
8-hr TWA[16]	0.0001	0.00001	0.003
72-hr GPL[17]	0.000003	0.000003	0.0001
ASC/SEL[18]	0.0003	0.0003	0.03

9.6.3.2 The Contingency Plan is implemented due to a spill or material release if:

9.6.3.2.1 The spill could release toxic or flammable liquids or vapors outside of engineering controls or could cause a fire or gas explosion hazard.

9.6.3.2.2 The spill could result in offsite or onsite soil, groundwater, or surface water contamination.

[16] Unmasked agent worker 8-hour Time Weighted Average (TWA).

[17] Non-agent worker/General Population (GPL) 72-hour time weighted average.

[18] Allowable Stack Concentration/Source Emission Limit.

9.6.3.2.3 The spill constitutes a release of a RQ (Reportable Quantity) of a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

9.6.3.2.4 The spill endangers human health or the environment for any other reasons.

9.6.3.3 The Contingency Plan is implemented due to an agent spill or release if:

9.6.3.3.1 Observation of an agent spill, leaking vapor, or mustard (garlic) odor outside of engineering controls.

9.6.3.3.2 Agent signs and/or symptoms in personnel are observed.

9.6.3.3.3 Agent is released to the environment, exceeding allowable stack limits.

9.6.3.4 In the event that a spill or material release has occurred, follow section 9.7.1.

9.6.4 **Decision Process**

9.6.4.1 A logic diagram of typical initial response activities leading to implementation of the Contingency Plan is shown in Figure 9-6-1. Should the incident be of a minor or controllable nature (i.e., it presents no potential hazard to human health or the environment), the IC will not implement the Contingency Plan but will complete the necessary reporting per section 9.7.1.4.

9.7 EMERGENCY RESPONSE PROCEDURES [R315-8-4.7]

9.7.1 Notification [R315-8-4.7(a)]

9.7.1.1 Notification and Mobilization Overview

9.7.1.1.1 The ability to quickly alert and notify personnel during an emergency event is critical. Site personnel and emergency responders must be informed in a timely manner to be able to initiate emergency response actions and implement protective actions. Twenty-four hour reporting will be adhered to as required by Condition I.U. The TOCDF will also send all other required reports, notifications, and submissions as required by Condition I.AA.2. to the Executive Secretary and the EPA Region VIII as required by Condition I.AA.3.

9.7.1.1.2 At TOCDF, emergency notifications are performed by the Control Room. Emergency conditions at TOCDF are most commonly indicated by system alarms sounding in the Control Room or by first responders at the event scene calling information into the Control Room. All alarms are centrally monitored in the Control Room; therefore, Control Room operators will often be aware of abnormal or emergency events as they occur. For the MDB, the Control Room has visual monitors as well as agent and other alarms. The Control Room also monitors plant systems and are therefore aware of which elements of a system may not be functioning properly. Because of their monitoring capability, the Control Room is most likely to notify personnel of an emergency or abnormal event based on direct and immediate input. First responder reports are the second most frequent means of event notification. All site personnel have been trained to

call the Control Room when they recognize an emergency situation. The Control Room can be reached by telephone or by hand-held radio at the following numbers:

- Emergency Telephone - Call 911.
- Telephone - 833-7700.
- Control Room Cellular - 830-2472.

9.7.1.1.3 The Control Room, which is staffed and operational 24 hours a day, 7 days a week, provides TOCDF with a 24-hour notification capability. They receive alarms and first responder reports and perform all further notifications required.

9.7.1.1.4 Control Room personnel record information provided by the caller on an Event Report form. The Control Room questions the caller to ensure all essential event information is obtained. The Control Room uses the Event Report form as the basis for all notifications.

9.7.1.1.5 Emergency event notifications are made to alert site personnel and mobilize emergency responders, including DCD support. Emergency notifications to off-post authorities are made via the DCD Emergency Operations Center (EOC). It is the responsibility of DCD to notify the public, as appropriate.

9.7.1.1.6 Notifications will serve to alert personnel that an emergency situation exists and provide specific instructions on required protective actions to be implemented.

9.7.1.2 Personnel Notification

9.7.1.2.1 The ability to quickly direct personnel from a danger area to a safe area and prevent offsite personnel from traveling into a danger area is vitally important. TOCDF has a system in place for promptly notifying both onsite and offsite personnel of an emergency at the site.

9.7.1.2.2 *Site Personnel*

9.7.1.2.2.1 The TOCDF site-wide public address system is used to notify site personnel of an emergency. The system simultaneously reaches personnel inside buildings, as well as those outdoors. The system is capable of providing both an alert signal and an emergency message throughout the site.

9.7.1.2.2.2 The alert signal varies according to the type event and action necessary. For any release of chemical agent, the agent alarm is sounded. A warbler tone alerts personnel to immediately mask and await emergency instructions. A steady tone alerts personnel to immediately mask and evacuate to the indicated upwind muster area. Whenever an agent alarm is activated, lights installed in the MDB begin flashing to alert personnel in high noise areas of an emergency event. For a non-agent emergency, the phrase "Attention, all site personnel" is broadcast as the alert signal which prompts personnel to listen for an important follow-on message.

9.7.1.2.2.3 An emergency message will quickly follow the alert signal to notify personnel of emergency events and, if necessary, provide protective action instructions. Instructional

messages are clear and concise. They will contain the information necessary for personnel to protect themselves. Sheltering messages will include instructions on how to maximize protection when sheltering. Evacuation instructions will include, at a minimum:

- Hazard type.
- Hazard location.
- Danger areas to avoid.
- Muster area.
- Best path of travel.

9.7.1.2.2.4 Evacuation instructions will contain familiar terms and landmarks and be broadcast initially at least two times, then periodically repeated.

9.7.1.2.3 *Public Address System*

9.7.1.2.3.1 The site-wide public address system consists of a signal generator, microphone, power amplifiers, and numerous loudspeakers installed throughout occupied buildings and outdoor areas across the site. The system is on twin-diesel generator backup power and a UPS system. Emergency use and activation of the PA system is controlled by Control Room operators. The agent alarm and evacuation alarm switches and the emergency microphone are also located there. When switched on, alarm signal and microphone messages override any other PA use.

9.7.1.2.3.2 In the event of microphone failure, a standard telephone can be used to make site-wide emergency announcements. Proper PA system functioning can be verified inside the Control Room by monitoring messages over Control Room loudspeakers. If the PA system fails during an emergency, radios and standard phones are used to dispatch runners to affected areas to make emergency announcements.

9.7.1.2.3.3 Emergency components of the PA system are tested weekly. During each test, the agent alarm and evacuation alarm are sounded, along with a test message.

9.7.1.2.4 *Offsite Personnel*

9.7.1.2.4.1 Off-site personnel will be notified of an event on site in order to provide any off-site protective actions required and prevent offsite personnel from inadvertently traveling into a danger area prior to access control being established. The Control Room will notify DCD EOC, who will activate the warning lights along the roads leading to TOCDF. The Control Room can directly activate the warning light on Rankin Road which is the most common access to the site. When the flashing lights are on, no personnel may proceed past the lights without their mask donned. Prompt notification to nearby offsite locations will also prevent outside personnel from adding to the problem. Offsite locations to be notified of all emergencies involving site-wide protective action include:

- DCD EOC

- Chemical Assessment Laboratory (CAL)
- Receiving Warehouse and Transfer Yard
- Stark Road Office
- Area 2 Warehouses

9.7.1.2.4.2 Notification of DCD personnel is performed by the EOC. TOCDF notification of the EOC is described below. The CAL, Receiving, and the Stark Road Office will be notified of an emergency on site by standard phone. The Control Room will inform these locations of the emergency and any offsite protective actions required. The Control Room will also advise the sites to keep offsite personnel away from the TOCDF; and, if site-wide sheltering is in effect, to instruct site personnel visiting their facility to phone their supervisor for accountability purposes. TOCDF personnel visiting Area 2 carry a cellular phone and will be notified by phone.

9.7.1.2.4.3 If an emergency occurs at any of the above-listed offsite locations, notification to the TOCDF Control Room may be accomplished using the same methods described above. In this situation, the CAL, Receiving, and the Stark Road Office will promptly notify the TOCDF Control Room of an emergency at their location. In the event of an emergency at Area 2, TOCDF personnel working there will report it to the Control Room using a cellular phone.

9.7.1.2.5 *DCD Installation*

9.7.1.2.5.1 The Control Room will notify the EOC of all TOCDF emergencies and chemical events using the EOC hotline phone, with standard phone and DCD radio as backup methods. Chemical events are defined in detail in Section 4, Definitions, of the TOCDF CAIRA Plan (current plan maintained on site). It is understood that within 10 minutes from initial confirmed detection of an actual or likely chemical agent release at the DCD installation, the DCD Commander or designee must report the event to the Tooele County Sheriff Dispatch Center. The Control Room shall therefore report all events immediately upon discovery to the EOC.

9.7.1.2.6 *TOCDF Management*

9.7.1.2.6.1 TOCDF senior management has an interest in any emergency event occurring in an area under TOCDF control. The Control Room will promptly notify TOCDF senior management of an emergency. At a minimum, the following managers or designees will be notified of all emergencies at TOCDF:

- General Manager
- Deputy General Manager for Plant Operations
- Deputy General Manager for Risk Management
- PMCD Shift Engineer

9.7.1.2.6.2 If the IC decides to mobilize the Management Advisory Team, the Control Room will notify MAT members.

9.7.1.3 Emergency Responder Notification

9.7.1.3.1 *Scene Response Teams*

9.7.1.3.1.1 TOCDF scene response teams will be notified of an emergency via the site PA system. HAZMAT, Decon, and Paramedic Teams are on site 24 hours a day, 7 days a week. When notification of site personnel occurs via the PA, response personnel are also alerted. The verbal PA announcement to site personnel is followed by a verbal announcement to the responders to mobilize or stand by. If the HAZMAT and Decon Teams are mobilized, the HAZMAT Team Leader and Decon Team Leader will contact the Control Room for information and response confirmation. The Clinic is notified using the Clinic hotline phone.

9.7.1.3.2 *DCD Primary Response Organizations*

9.7.1.3.2.1 DCD Fire Station on the DCD installation will be notified of a TOCDF emergency by the Control Room using a standard phone. The backup means of notification to the DCD Fire Station is by cellular telephone.

9.7.1.3.2.2 The Control Room will notify the DCD Site Security Control Center (SSCC) using a standard phone. The backup means of notification to the SSCC is by DCD radio. Entry Control Facility (ECF) personnel will be alerted to an emergency event when site personnel are notified over the site PA system. ECF personnel will be mobilized by the SSCC.

9.7.1.3.2.3 For all TOCDF emergency events, the Control Room will contact the DCD Emergency Operations Center (EOC) via hotline telephone, with standard phone as backup, to provide initial alert and request assistance as necessary.

9.7.1.3.3 *Management Advisory Team*

9.7.1.3.3.1 During normal working hours for members of the Management Advisory Team (MAT), the MAT will be alerted by the Control Room via the public address system and standard telephones. Off-hours, standard telephone will be the primary means of notifying the MAT with cellular phone as the backup.

9.7.1.4 HAZMAT Release Reporting

9.7.1.4.1 For any emergency event requiring HAZMAT release reporting, the Control Room will notify the DCD Emergency Operations Center and the PMCD Shift Engineer, and provide a copy of the Event Report. All reporting to Army, local, State, and Federal agencies will be handled by DCD and the Environmental Department.

9.7.2 **Identification of Hazardous Materials [R315-8-4.7(b)]**

9.7.2.1 Identification of Hazardous Materials Overview

9.7.2.1.1 As soon as possible, the IC will determine the character, source, and extent of any released materials by visual inspection and with reference to available information such as manifests, sample analyses, waste profile sheets, Material Safety Data Sheets (MSDS), and other available sources of information.

9.7.2.1.2 Initial identification includes the following parameters:

9.7.2.1.2.1 Origin of the release

9.7.2.1.2.2 Condition of the source (e.g., repairable leak, uncontrollable leak, easily moved, unmovable, etc.)

9.7.2.1.2.3 Physical state of the spill (e.g., granular, liquid, gas)

9.7.2.1.2.4 Odor, if noticed

9.7.2.1.2.5 Color of material and

9.7.2.1.2.6 Noticeable reactions (e.g., fuming, flaming, or gas evolution).

9.7.2.1.3 After the materials have been identified to the fullest extent possible, the IC assesses the possible hazards to human health and the environment in accordance with Section 9.7.3 of the Contingency Plan.

9.7.2.2 Hazardous Materials at TOCDF

9.7.2.2.1 Hazardous materials stored and used at TOCDF that may be involved in an emergency fall into two major categories: Industrial Chemicals and Chemical Agents.

9.7.2.2.2 Industrial chemicals are handled through inventory control. The control room has access to information on all chemicals through Material Safety Data Sheet (MSDS) records kept on site. Control room personnel will inform the IC of any chemicals involved in a spill or release. Bulk chemicals stored onsite include sodium hydroxide (caustic), and sodium hypochlorite (bleach).

9.7.2.2.3 The chemical agents stored in Area 10 comprise three basic types. These are the persistent nerve agent VX and the non-persistent nerve agent GB (Sarin), both of which belong to a family of organophosphorus chemicals; and the blistering mustard agents (H, HD, HT). The mustard agents H, HD, and HT all refer to various blends of the same basic chemical compound[19].

9.7.2.2.4 Chemical agents are stored in a variety of containers and munitions--rockets, land mines, artillery and mortar shells, bombs, spray tanks, and bulk containers. Munition and bulk item characteristics are shown in Table 9-7-1.

[19] H is mustard made by the Levinstein process. It contains up to 25% by weight of impurities, chiefly sulfur, organosulfur, and polysulfides. HD (distilled mustard) is mustard purified by washing and vacuum distillation which reduces the impurities to about 5%. HT is a 60:40 mixture by weight of HD and T. T is an abbreviation for Bis 2 (chloroethylthioethyl) ether.

Table 9-7-1[(1)]
MUNITIONS AND BULK ITEM CHARACTERISTICS

Item	Agent	Fuzes	Bursters
4.2-inch mortar shell	HD	YES	YES
	HT	YES	YES
105-mm cartridges (i.e., projectiles plus propellant charges)	GB	YES	YES
105-mm projectiles	GB	NO	NO
155-mm projectiles	VX	NO	YES
	GB	NO	YES
	H	NO	YES
Bombs	GB	NO	NO
Spray tanks	VX	NO	NO
Land mines	VX	YES	YES
M55 rockets	VX	YES	YES
	GB	YES	YES
Ton containers	HD	NO	NO
	GB	NO	NO
	VX	NO	NO

Notes:
(1) From: "Disposal of Chemical Munitions and Agents," National Research Council, Washington, D.C. 1984.

9.7.2.2.5 The M55 rocket is stored with shipping and firing tube, rocket motor, rocket motor igniter, agent filled warhead, burster charge, and fuze. The structure consists of a thin walled aluminum container with a central well that holds the burster charge. The M55 rockets may contain either VX or GB.

9.7.2.2.6 Bulk containers are standard one-ton tanks in which GB, HD or VX are stored. Spray tanks containing VX and bombs containing GB are stored without explosives.

9.7.2.2.7 Mortars and some projectiles contain mustard agent; cartridges and projectiles contain GB. The 155 mm projectiles may contain VX. Only VX is contained in M23 land mines, which are packed three to a shipping package (mine drum).

9.7.2.2.8 As mentioned, the five major agents slated for demilitarization are the three types of mustard, $C_4H_8Cl_2S$; Sarin (GB), $C_4H_{10}FO_2P$; and VX, $C_{11}H_{26}NO_2PS$. The chemical and physical properties of the agents are summarized in Table 9-7-2 and are discussed in more detail in the following paragraphs.

Table 9-7-2[(1)]
CHEMICAL AND PHYSICAL PROPERTIES OF AGENTS

Agent	Chemical Formula	Molecular Weight	Boiling Point(°C)	Melting Point(°C)	Vapor Pressure (mm Hg)
H	$C_4H_8Cl_2S$	175	225	5 to 14	0.059 (20°C)
HD	$C_4H_8Cl_2S$	159	217	14	0.069 (20°C)
HT	$C_4H_8Cl_2S$	(HD = 159)	228	0	0.079 (20°C)

Table 9-7-2[(1)] CHEMICAL AND PHYSICAL PROPERTIES OF AGENTS					
Agent	**Chemical Formula**	**Molecular Weight**	**Boiling Point(°C)**	**Melting Point(°C)**	**Vapor Pressure (mm Hg)**
	$C_8H_{16}Cl_2OS_2$	(T = 263)			
GB	$C_4H_{10}FO_2P$	140	158	-56	2.9 (25°C)
VX	$C_{11}H_{26}NO_2PS$	267	298	-50	0.00063 (25°C)

Notes:
(1) H, HD, HT, GB, VX data (U.S. ARMY, 1996, 1999, and 2001).

9.7.2.3 GB (Sarin): Physical, Chemical, and Toxic Properties

9.7.2.3.1 GB, also known as Sarin, is the most volatile of the nerve agents in the stockpile and, for this reason, is mainly an inhalation hazard. This nerve agent will not, however, dissipate immediately if spilled. GB is clear to amber in color, with no odor. GB is readily hydrolyzed by either acid or base to relatively nontoxic products. The hydrolysis products, hydrofluoric acid and isopropyl methylphosphonic acid, can readily attack metal, which may explain degradation of some weapons. GB is miscible with water, but under neutral conditions (pH 7) the half-life for hydrolysis is several days.

9.7.2.3.2 *Effects of GB*

9.7.2.3.2.1 GB is an extremely active inhibitor of cholinesterase (CHE). By forcing the buildup of acetylcholine at the synapsis of cholinergic nerve fibers, GB causes victims to experience pinpoint pupils (miosis), increased salivation, abnormal tearing of the eyes, urination, diarrhea, convulsions, respiratory collapse, and death. A lethal dosage of GB is 100 mg-min/m^3. Early treatment with oxime derivatives, such as pralidoximine, can accelerate regeneration of cholinesterase, especially in the peripheral nervous system. Treatment with atropine, an inhibitor of acetylcholine release, can also mitigate the toxicity of GB.

9.7.2.3.2.2 Victims surviving the acute cholinergic effects of GB may suffer delayed neuropathy syndrome characterized by degeneration of peripheral nerves and permanent paralysis. In addition, like similar compounds, GB may cause abnormal fetal development. For this reason, pregnant women are restricted from areas containing the agent.

9.7.2.3.2.3 Absorption of enough nerve agent by any route results in the following generalized effects upon the body system:

- Pupils become pinpoint, sometimes unequal (miosis)
- Frontal headache, eye pain, and slight dimness of vision occur
- Occasional nausea and vomiting
- Tightness in chest, wheezing or coughing
- Giddiness
- Tension

- Anxiety
- Restlessness
- Slowness of recall
- Confusion
- Slurred speech
- Generalized weakness
- Drooling
- Runny nose

9.7.2.3.2.4 The extent of the symptoms depends on the amount of the agent received. A severe exposure causes:

- Convulsions (twitching, jerking, staggering)
- Collapse
- Paralysis
- Death, without immediate treatment, usually within 15 minutes.

9.7.2.3.3 *Hazard Symbol for GB*

9.7.2.3.3.1 The hazard symbol for GB is a yellow circle, 24 inches in diameter, with a black letter "G" in the middle.

9.7.2.4 <u>VX: Physical, Chemical, and Toxic Properties</u>

9.7.2.4.1 VX is a clear to straw colored, oily liquid. It is both an inhalation and a skin contact hazard. Despite its low vapor pressure, VX still poses a significant vapor hazard. A lethal dosage for VX is 35 mg-min/m^3. VX is a nerve agent. Nerve agents are organophosphorus compounds, chemically related to pesticides. All nerve agents bind to cholinesterase, an enzyme of the human body that is essential for functioning of the nervous system.

9.7.2.4.2 *Effects of VX*

9.7.2.4.2.1 The acute toxic effects of VX are like those of GB, and its mode of action is similar. Absorption of VX results in symptoms identical to those produced by GB. Absorption of enough nerve agent by any route results in the following generalized effects upon the body system:

- Pupils become pinpoint, sometimes unequal (miosis)

- Frontal headache, eye pain, and slight dimness of vision occur
- Occasional nausea and vomiting
- Tightness in chest, wheezing or coughing
- Giddiness
- Tension
- Anxiety
- Restlessness
- Slowness of recall
- Confusion
- Slurred speech
- Generalized weakness
- Drooling
- Runny nose

9.7.2.4.2.2 The extent of the symptoms depends on the amount of the agent received. A severe exposure causes:

- Convulsions (twitching, jerking, staggering)
- Collapse
- Paralysis
- Death, without immediate treatment, usually within 15 minutes.

9.7.2.4.3 *Hazard Symbol for VX*

9.7.2.4.3.1 The hazard symbol for VX is a yellow circle, 24 inches in diameter, with black letters "VX" in the middle.

9.7.2.5 Mustard: Physical, Chemical, and Toxic Properties

9.7.2.5.1 Mustard agent comes in three varieties that differ mainly in purity. H is the crude agent made by the Levinstein process. Distillation of the crude material yields HD. A mixture of HD (60 percent) with a similar compound, T ($ClC_2H_4SC_2H_4)_2O$), is termed HT. T is also known as bis 2 (chlorethylthioethyl)ether. HT has the advantage of a lower melting point than pure HD, which freezes at 15°C and, therefore, cannot be poured at low ambient temperature. Mustard belongs to a family of toxicants, the N-, S-, and O-mustards. Mustard is a colorless, oily liquid with a garlic odor. It quickly numbs the olfactory nerves, after which the odor is no longer detected. Although the boiling point is relatively high (225°C for H), it has a significant vapor pressure at ambient temperatures. Even in the solid state at 0°C, the vapor pressure is 0.025 mm of Hg, which is 28% of the vapor pressure at 30°C. Mustard is virtually insoluble in water, but, because of its high lipid solubility, it rapidly penetrates the skin. Mustard is considered to be a "persistent" chemical agent.

9.7.2.5.2 *Effects of Mustard*

9.7.2.5.2.1 Although inhalation of mustard produces pulmonary edema, it is classified as a vesicant. As such, it acts on the eyes, lungs, and skin, and burns and blisters the skin or any part of the body that comes in contact with it. Mustard has also been identified as carcinogenic, teratogenic, and mutagenic.

9.7.2.5.2.2 The eye is the most vulnerable part of the body to mustard. Long exposures to low concentrations or short exposure to high concentrations can result in permanent eye damage. The initial effect after skin contact is a reddening of the skin. Depending on the severity of exposure, the reddening may progress to blistering and tissue destruction. The initial exposure is not accompanied by a sensation, but, as the symptoms develop, there may be an itching or burning sensation, which develops to reddening and then to blistering. Inhalation of mustard vapor or aerosol causes damage to the mucous membranes of the upper respiratory tract. Damage from mustard exposure develops slowly and may not reach maximum severity for several days.

9.7.2.5.3 *Hazard Symbol for Mustard*

9.7.2.5.3.1 The hazard symbol for mustard is a yellow circle, 24 inches in diameter, with a black letter "H" in the center.

9.7.3 **Hazard Assessment [R315-8-4.7(c)]**

9.7.3.1 Hazard Assessment Overview

9.7.3.1.1 Hazard assessment involves determining the type and nature of an emergency situation and its potential or actual impact. This leads to the determination of a hazard zone around the accident area, in which an unacceptable level of personnel hazard exits. Hazard assessment results serve as the basis for determining appropriate emergency response actions (e.g., hazard containment and control, selection and implementation of protective actions, mobilization of response personnel and equipment, etc.).

9.7.3.1.2 Hazard assessment will be performed continually during the response phase of an event. The initial assessment will involve determining, as soon as possible, the emergency hazard type, source, amount, severity, and scope. Event hazard assessment will be

performed by the first responders, Scene Control Officer (SCO), response teams, Control Room personnel, and the Incident Commander (IC) with assistance from DCD during events involving the release of chemical agent. Subsequent assessments will support redefining the event hazard zone and redirecting response and protective actions as necessary.

9.7.3.1.3 The hazard assessment process involves the following primary activities: Event detection; Event information gathering; Event assessment; Determination of event hazard zone; and On-going verification of event hazard zone.

9.7.3.1.4 If a chemical agent release extends off-post, civilian authorities will become involved in extended or long-term assessment. This assessment will be primarily concerned with evaluating the impact of the event on the population and monitoring conditions to determine appropriate protective measures. On-going assessment will include identifying long-term adverse effects on air, soil, water, wildlife, etc.

9.7.3.1.5 In the event of a DCD emergency, which affects TOCDF, DCD performs hazard assessment and provides TOCDF the appropriate protective actions.

9.7.3.2 Event Detection

9.7.3.2.1 Emergency event assessment and response activities begin with the detection of an event. Emergency events are identified primarily through the following means:

- Site personnel in the vicinity (who become event first responders)
- Control Room (via plant data monitoring)
- Detection equipment (for chemical agent)

9.7.3.2.2 Personnel working in the vicinity of the event area will be the individuals most likely to witness or discover an emergency situation. At the TOCDF, all personnel have been trained to the OSHA Hazardous Materials Awareness Level. This provides a strong site-wide emergency detection capability. Awareness level personnel are trained to initiate the emergency response process by performing an initial assessment of event conditions and contacting the Control Room. The awareness training course covers the following basic concepts: Identification of emergency situations; Hazardous substances and their dangers and risks; Recognition of the presence of hazardous substances in an emergency; Identification of hazardous substances; and the Role of the first responder in the emergency response process, including use of the US DOT Emergency Response Guidebook.

9.7.3.3 Event Information Gathering

9.7.3.3.1 It is important to gather as much information about an emergency event as soon as possible after detection. Accurate and timely event information results in a more comprehensive assessment, which leads to implementation of the most appropriate response actions.

9.7.3.3.2 The first information likely to be available during an emergency will be from the first responders on the scene. All site personnel are taught to report emergency situations to the Control Room. The Control Room can be reached by telephone or by hand-held radio at the following numbers:

- Emergency Telephone - Call 911.
- Telephone - 833-7700.
- Control Room Cellular - 830-2472.

9.7.3.3.3 The information provided by first responders will allow for an initial assessment to be performed by the Control Room. However, to support the complete emergency event assessment process, the following information must be known or projected:

9.7.3.3.3.1 Nature of release;

- Hazard type
- Hazard amount (small, moderate, or large)
- Source rate (instantaneous, intermittent, or continuous)
- Source behavior (leak, spill, detonation, fire, or combustion)
- Agent behavior (persistent, semi-persistent, or non-persistent)
- Meteorological conditions (temperature, wind speed, direction at source location, and atmospheric inversion)

9.7.3.3.3.2 Description of hazard(s);

- Potential vapor hazard? (should be assumed until monitoring data indicates otherwise)
- Potential water hazard?
- Potential subsurface hazard? (adsorbed into the soil)

9.7.3.3.3.3 Anticipated duration of hazard; and

9.7.3.3.3.4 Extent of the area impacted by dispersion of hazard.

9.7.3.3.4 Event information is recorded by Control Room Operators on an Event Report. Event information beyond that usually available from first responders is obtained from many different sources, including:

- Emergency response teams
- SCO, IC, and advisors
- Control Room
- Monitoring and sampling teams
- DCD Emergency Operations Center

9.7.3.4 <u>Information Sources</u>

9.7.3.4.1 The following describes the type of event information provided by each of these groups.

9.7.3.4.2 *Information from Emergency Response Teams*

9.7.3.4.2.1 Emergency response teams include the HAZMAT Team, Paramedic Team, and Decon Team. The HAZMAT Team will provide information about the type, quantity, source, and behavior of the hazardous substance. HAZMAT members may also provide air sampling support. The Paramedic Team will provide information about number of casualties and the type of injuries to the Control Room. The Clinic will provide patient condition, treatment, and transport status periodically to the Control Room. The Decon Team will provide the number of people processed through the Personnel Decontamination Station (PDS), and the capability of the PDS to handle additional personnel. By working close to the hazard, response teams have a unique perspective on the event and can provide specific information on the hazard and its immediate impacts.

9.7.3.4.3 *Information from SCO, IC, and Advisors*

9.7.3.4.3.1 The SCO and IC gather event information through direct observation and input from advisors. The SCO, who is typically the first outside responder on the scene, provides event information to the IC, Control Room, and response teams.

9.7.3.4.4 *Information from TOCDF Control Room*

9.7.3.4.4.1 The Control Room serves as the technical center for plant system information as well as a reference for technical information. Control Room personnel monitor the status of plant systems and activities via monitoring systems which feed directly to computer terminals. In addition, the Control Room acts as a central point for collecting, assessing, and distributing event information from responders. The Control Room also assists scene responders in obtaining required resources and forwards DCD Meteorological/Detection Teams (Met/Det) Team results, provided by the EOC, to the SCO.

9.7.3.4.5 *Information from Monitoring and Sampling Teams*

9.7.3.4.5.1 For emergency events involving the release of chemical agent or industrial chemicals, monitoring and sampling will be performed to confirm the release plume location and levels. Monitoring and sampling activities will be initiated as soon as possible after emergency event detection. Initial monitoring will focus on broadly defining the hazard and its impacts. Subsequent monitoring (and sampling) will provide more detailed hazard release characteristics.

9.7.3.4.5.2 The HAZMAT Team will perform airborne monitoring as necessary during events involving the release of industrial chemicals. The HAZMAT team will use an air pump instrument and associated detector tubes for the chemical(s) involved to perform air monitoring. Monitoring personnel will perform environmental sampling (e.g. surface, soil, water) as directed by the IC.

9.7.3.4.5.3 For events involving the release of chemical agent, DCD will dispatch Met/Det Teams. Chemical agent samples will be taken to a lab located at DCD.

9.7.3.4.5.4 DCD agent monitoring and sampling will be accomplished using the following equipment:

9.7.3.4.5.4.1 Real Time Analysis Platform (RTAP): Combines gas chromatograph with an automatic continuous environmental monitoring system in a self-contained mobile platform; provides low-level chemical agent monitoring capability. RTAPs required by an event at TOCDF will be provided by DCD.

9.7.3.4.5.4.2 Depot Area Air Monitoring System (DAAMS)

9.7.3.4.5.4.3 Air sampling unit designed to provide low-level detection capability for GB, H, and VX agents. Requires lab analysis.

9.7.3.4.5.5 In the event off-post monitoring and sampling are required, DCD, via the EOC, may provide resources and assistance to local off-post agencies requesting support.

9.7.3.5 Event Assessment

9.7.3.5.1 Initial event assessment will often be done by first responders at the scene or by the Control Room. This initial assessment involves a quick analysis of immediate hazard area dangers. Subsequent assessments will involve more integrated and complex analysis of event information. Hazard assessment is a process, which will continue throughout the event as additional event information becomes available.

9.7.3.5.2 The hazard assessment process will involve analysis of threats, direct and indirect, to both human health and the environment. Direct threats are those posed by the immediate hazard and are generally obvious. The dangers of indirect effects are less obvious and can be caused by, for example, the generation of toxic, irritating, or asphyxiating gases from the event hazard; the run-off of water or chemicals used to control fire and heat-induced explosions; and the use of large amounts of decontaminants.

9.7.3.5.3 The event hazard assessment process involves projection of affected areas and contamination levels using computer modeling based on event information and comparison of model predictions versus actual field data from Met/Det Teams (for agent only). For chemical agent releases, the DCD Emergency Operations Center (EOC) directs plume plotting and monitoring and sampling activities. The EOC initially performs plume projection based on the MCE (Maximum Credible Event) for a CAIRA event. The EOC later uses actual field data received from DCD Met/Det Teams to refine the initial projections. In the event of a DCD emergency which affects TOCDF, DCD performs hazard assessment and develops and provides protective action recommendations.

9.7.3.5.4 Hazard assessment will also be performed after the event response phase and prior to entering the recovery phase. This assessment will focus primarily on identifying and analyzing long-term hazards and impacts and will support the setting of recovery priorities.

9.7.3.5.5 Event assessment results will be used by the IC in directing response activities and developing TOCDF site protective actions. This information will also be provided to DCD via the EOC for use in developing depot protective actions. DCD will supply the

information to offsite authorities for use in developing protective actions for the public. The timeliness and accuracy of the event hazard assessment affects the ability to protect site and post personnel as well as the public.

9.7.3.5.6 Hazard assessment will result, at a minimum, in the following key information:

- Type and nature of hazard
- Quantity of hazardous substance and form of release
- Direction and speed of release
- Definition of the hazard zone
- Expected effects on personnel in the hazard zone

9.7.3.6 Determination of Event Hazard Zone

9.7.3.6.1 Based on the emergency event characterization, a hazard zone will be determined. The hazard zone is the area around the hazard source in which an unacceptable level of personnel hazards exist.

9.7.3.6.2 For industrial chemical releases, the hazard zone will be determined by comparing hazard exposure projections to the Time Weighted Average (TWA) for the specific hazardous substance involved. The TWA is the time weighted average concentration for a normal 8-hour workday and a 40-hour workweek to which nearly all workers may be repeatedly exposed day after day without adverse effect. A TWA level of greater than 1.0 is considered to be an unacceptable personnel risk. The use of TWAs to define the hazard zone represents a conservative approach to protecting personnel.

9.7.3.6.3 For releases of chemical agent, DCD EOC staff determine the hazard zone by defining the "no effects" distance for the specific chemical agent involved. For chemical munitions in an explosively hazardous condition, EOC staff use the munitions fragment distance as the minimum hazard zone. Initial definition of the hazard zone will be based on the Maximum Credible Event (MCE) developed for TOCDF. The hazard zone will be refined as appropriate as actual event information becomes available.

9.7.3.6.4 The hazard zone will be verified by results from monitoring and sampling activities. Changes in monitoring and sampling results, as well as changes in event conditions, will result in re-definition of the event hazard zone.

9.7.4 **Control Procedures [R315-8-4.7(a)]**

9.7.4.1 TOCDF personnel will comply with R315-8-4.2 by evaluating emergency situations with regards to the criteria specified in Section 9.6 and, if the emergency situation meets the criteria specified in Section 9.6 (i.e., the situation could threaten human health or the environment), immediately implementing the Contingency Plan (i.e., taking the appropriate response actions specified in Section 9.7, etc.). By implementing the appropriate portions of the Contingency Plan, the requirements of R315-8-4.7 will be addressed as required by R315-8-4.3(a).

9.7.5 **Prevention of Recurrence or Spread of Fires, Explosions, or Releases [R315-8-4.7(e) & (f)]**

9.7.5.1 Fire

9.7.5.1.1 Fires or explosions occurring on the facility grounds are handled by the Emergency Response Team and the Deseret Chemical Depot Installation Fire Department unless they are beyond the capabilities of the two units. In that case, the Tooele County, Tooele City, Grantsville and/or Stockton Fire Departments are called in to supplement onsite capabilities.

9.7.5.1.2 If a fire involves explosive materials or is supplying heat to it, or if the fire is so large that it cannot be extinguished with the equipment at hand, the personnel involved shall evacuate and seek safety.

9.7.5.1.3 The TOCDF is equipped with both smoke and heat detectors that alarm in the Control Room. The fire suppression system is designed to extinguish a fire before the fire increases the amount of agent available for release to the environment. In addition, the fire suppression system reduces the temperature produced by a fire to prevent rupturing of agent storage tanks/containers and piping, and the detonation of explosively configured munitions.

9.7.5.1.4 All fire response personnel are provided with the appropriate protective clothing and safety equipment. Care must be taken to contain and recover any runoff of waste and water, foams, or chemicals applied to the fire. If possible, the area should be diked and/or any runoff drains blocked prior to using liquids to put out the fire. Once extinguished, the materials involved in the fire and surrounding area are decontaminated, if necessary, recovered, and placed in containers for proper disposal.

9.7.5.1.5 In the event of a fire, the major effort is placed on preventing the fire from spreading to nearby areas. The following actions are taken in indoor areas affected by a fire or explosion:

- Fire doors in buildings are closed.
- Hazardous work in all areas are terminated immediately.
- All feed lines to furnaces and additional equipment are shut down, as necessary and practical.
- The IC is contacted.
- The area is cleared of all personnel not actively involved in fighting the fire. Non-emergency personnel are to report to the designated assembly point for a head count.
- All Injured persons are removed, and medical treatment is administered by qualified personnel.

9.7.5.1.6 The IC is responsible for all firefighting efforts until help from outside the facility arrives. Supervisors of unaffected areas will stay with their personnel and will be ready to evacuate and account for the persons under their supervision.

9.7.5.2 Fire Reporting and Evacuation

9.7.5.2.1 *Immediate Actions*

9.7.5.2.1.1 As soon as any fire of any size is found, the Control Room must be notified. If the fire is observed visually and no automatic alarms are activated, the individual noticing the fire pulls the nearest manual alarm in the area. If the sprinkler, dry chemical, or Halon systems are activated, ample time should be given for them to operate. When the fire is extinguished, they should be deactivated. After the Control Room Operator has determined the size and location of the fire, he announces "Fire in the (specify) room, stand by for instructions," on the public address system. If the public address system is not functional, operators are used to pass instructions. Anyone in immediate danger must be assisted, if safe to do so. All unpacking and feed processing are stopped.

9.7.5.2.1.2 The Control Room Operator notifies the IC and gives the information as noted below. The following information is also relayed to other appropriate personnel:

(a) Location of fire
(b) Type of fire (if known)
(c) Hazardous material involved
(d) Number of known casualties
(e) Type of injuries (if known)

9.7.5.2.1.3 The IC determines the course of action based on the seriousness of the situation. The seriousness or size of a fire is a subjective decision that must be made as quickly as possible. If there is ever any doubt on the course of action to be taken, a large fire is assumed.

9.7.5.2.2 *Subsequent Actions*

9.7.5.2.2.1 Subsequent actions depend on the magnitude of the fire and, more importantly, the location. TOCDF guideline GDL-EP-025 and procedure TE-CP-G02 will be followed during firefighting activities at TOCDF.

9.7.5.2.2.2 The DCD installation Fire Department is responsible for fighting the fire. The IC directs the appropriate person to remain with the DCD installation Fire Department during firefighting for assistance with technical advice.

9.7.5.2.2.3 An Emergency Response Team dressed in appropriate protective clothing enters the building to conduct reentry monitoring only after receiving approval from the IC, installation Fire Department Chief and Safety Representative.

9.7.5.2.2.4 The IC, Safety Representative and any other applicable personnel assess the damage and determine any further course of action to be taken.

9.7.5.3 Fires and Agent Releases

9.7.5.3.1 If an agent release occurs during or as a result of a fire, the offgases from the fire may contain toxic chemicals. As a precaution, all personnel fighting fires are in appropriate protective clothing at all times. The potentially toxic offgases cannot be controlled, but every effort is made to quickly extinguish the fire and douse any agent leaks with decontaminant.

9.7.5.3.2 After a fire involving chemical agents has been controlled and extinguished, the Emergency Response Team closely monitors the affected area to determine that all traces of chemical agents have been thoroughly decontaminated. For events outside the MDB, the workers initially use standard detection kits to clear an area. More sensitive analyses are conducted in the facility laboratory, if necessary. Inside the building, standard low level monitors of the facility are used to clear an area. This involves ensuring that all monitors are returned to a normal level and that no detectable chemical agent remains above the NOTIFICATION ALARM level.

9.7.5.3.3 Runoff from fires inside the MDB are collected in sumps that drain to the SDS tanks. From there, these runoffs are fed to one of the two LICs. For an event at the facility, such as a transportation accident involving fire, runoff is contained as much as practical, absorbed on pads and managed appropriately.

9.7.5.3.4 Any remaining materials in the fire area that may have been exposed to agent are decontaminated with decontamination solution and managed appropriately.

9.7.5.3.5 *Prevention of Recurrence, Spread of Fires, Explosions, or Releases [R315-8-4.7(e) & (f)]*

9.7.5.3.5.1 Fire and spill response actions discussed previously, and explosions in the following section are the primary means of preventing releases of hazardous waste resulting from the recurrence or spread of fires and explosions. Other actions include collecting and containing the released waste and recovering or isolating containers.

9.7.5.3.6 If the facility stops operations in response to a fire, explosion, or release, the Emergency Coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

9.7.5.4 Explosive Hazards

9.7.5.4.1 In general, two types of explosive hazards are of concern in the facility: (1) explosives in the presence of agent, and (2) explosives alone. Many of the munitions to be processed in the facility contain explosives (bursters, supplemental charges, and fuzes). A detonation of an explosively configured munition presents not only a hazard to personnel and property from the blast effects, but also a hazard from the spread of chemical agent throughout the local work areas. Once the explosively configured munition has been disassembled in the Explosive Containment Room, the explosive components will be separated from the agent and agent exposure from a detonation is not a concern. After separation, the explosives are incinerated in the Deactivation Furnace System where all energetic material is destroyed.

9.7.6 **Storage and Treatment of Released Material [R315-8-4.7(g)]**

9.7.6.1 Once the emergency situation has ended, the IC will ensure that recovered waste, contaminated soil, or any other material (e.g., decontamination solution, etc.) that results from a release, fire, or explosion at the facility is immediately stored (i.e., placed in containers or tanks in good condition), treated, or shipped offsite. When determining the appropriate destination for this released material, the IC will address the compatibility considerations described below in Section 9.7.7. Information regarding the management of material that results from a release is provided below in Sections 9.7.9, 9.7.10, and 9.7.11.

9.7.6.2 Any agent-contaminated spilled liquids and any solid materials (rags, clothing, etc.) will be managed in accordance with this Permit. Waste that is not agent-contaminated will be managed onsite in accordance with this Permit or applicable regulations. The IC will ensure that, after clean-up is complete, all equipment and PPE used during clean-up is decontaminated as necessary (refer to Section 9.7.8 below) and first aid supplies and absorbent materials are restocked as appropriate.

9.7.7 **Incompatible Waste [R315-8-4.7(h)(1)]**

9.7.7.1 The IC will ensure that, in the affected areas of the facility, the storage and treatment of wastes that may be incompatible with the released materials will be prevented until clean-up procedures are completed.

9.7.7.2 The TOCDF operating approach (i.e., only processing munitions and bulk containers containing one type of agent at a time) minimizes the potential of released material being incompatible with other wastes in the area. Also, the design of the plant minimizes the chances of incompatible material contact. For instance, the brine, spent decontamination solutions, and agent each have a separate and unique destination (e.g., BRA storage tanks, spent decontamination tanks, agent collection tanks). Additionally, this Permit mandates that containers, which share a common secondary containment system, only be used for the storage and treatment of compatible waste streams. Likewise, this Permit requires that tanks, which share a common secondary containment system, only be used for the storage and treatment of compatible waste streams. Therefore, the plant design, this Permit, and normal operating procedures will generally prevent management of an incompatible waste in an area where a release has occurred.

9.7.7.3 However, to ensure segregation of incompatible waste and materials, the IC will assure that the released material is characterized by the appropriate means (e.g. analysis, checking facility records if origin of the release is known, etc.) and will use this information to ensure that no incompatible materials or wastes are brought into the affected area. The IC will also compare the characterization of the released material to the characteristics of the waste and material already stored in the affected area. If, based upon this comparison, any transportable incompatible materials are determined to be in the area and available storage capacity exists elsewhere at the facility, the IC will have these materials moved to another area of the facility (e.g., a different container storage area or tank system, etc.) where segregation of incompatible wastes/materials can be assured. Potentially incompatible waste or material that cannot be removed from the affected area will be segregated from the released material by using any appropriate means (e.g., earthen berms, overpacks, etc.) until the clean-up procedures are completed.

9.7.8 **Post-Emergency Equipment Maintenance [R315-8-4.7(h)(2)]**

9.7.8.1 After an emergency event, all emergency equipment used during the emergency response/clean-up, including PPE, will be either: (1) discarded and replaced with new emergency equipment/PPE; or (2) cleaned with the proper decontamination solution, repaired as necessary, and reused. Also, as necessary, absorbent material and first aid supplies will be restocked and fire extinguishers recharged. Before operations resume, an inspection of the affected emergency equipment listed in Section 9.8 will be conducted by the IC or his designee to ensure that the equipment is clean and fit for future use. Once this inspection is complete and the appropriate notifications have been made, operations may resume in the affected area.

9.7.9 **Container Spills and Leakage [R315-8-4.3, R315-8-9.2]**

9.7.9.1 If there is a spill, leak, or release from a container, which could threaten human health or the environment, the TOCDF Emergency Response Plan (ERP) will be implemented. If this release involves a chemical agent and/or munitions, then the Chemical Accident/Incident Response and Assistance (CAIRA) Plan (Annex B of the ERP) will also be implemented. These plans provide detailed procedures, which encompass the various aspects of emergency response, including: notification, mobilization, PPE requirements, hazard assessment, emergency response, recovery, etc.

9.7.9.2 If the spill, leak, or release from a container could threaten human health or the environment, then this section of the Contingency Plan will also be implemented. This section of the Contingency Plan augments the procedures provided in the ERP and the CAIRA Plan by focusing on procedures for responding to releases from containers.

9.7.9.3 If an agent release is involved, the first individual to observe the release will mask and notify the Control Room. The procedures described in the ERP and CAIRA as well as the procedures identified below will then be followed. If a non-agent release is encountered, then the first individual to observe the release will do the following:

- Alert other nearby workers and, if outside, move upwind of the release.
- Contact the Control Room, which will then notify the Emergency Coordinator, report the release, location, nature of material spilled (if known), and the estimated amount involved.
- Prevent access to the area by vehicles or other personnel.
- Follow instructions offered by the Emergency Coordinator or the Control Room.

9.7.10 **Tank Spills and Leakage [R315-8-10 [40 CFR 264.194(c)]]**

9.7.10.1 If there is a spill, leak, or release from a tank system, which could threaten human health or the environment, the TOCDF Emergency Response Plan (ERP) will be implemented. If this release involves a chemical agent, then the Chemical Accident/Incident Response and Assistance (CAIRA) Plan (Annex B of the ERP) will also be implemented. These plans provide detailed procedures, which encompass the various aspects of emergency response, including: notification, mobilization, PPE requirements, hazard assessment, emergency response, recovery, etc.

9.7.10.2 If the spill, leak, or release from a tank system could threaten human health or the environment, then this section of the Contingency Plan will also be implemented.

9.7.11 **Spills and Leakage from Other Regulated Units**

9.7.11.1 Spills and leakage from other units at the TOCDF is possible. These units include the incineration systems (LIC1, LIC2, DFS, MPF), the associated pollution abatement systems, the Subpart X units (BRA[20], RSM, BDS, PMD, MDM), and Slag Removal System (SRS).

9.7.11.2 If there is a spill, leak, or release from a unit identified above, which could threaten human health or the environment, the TOCDF Emergency Response Plan (ERP) will be implemented. If this release involves a chemical agent and/or munitions, then the Chemical Accident/Incident Response and Assistance (CAIRA) Plan (Annex B of the ERP) will also be implemented. These plans provide detailed procedures, which encompass the various aspects of emergency response, including: notification, mobilization, PPE requirements, hazard assessment, emergency response, recovery, etc.

9.7.11.3 If an agent release is involved, the first individual to observe the release will mask and notify the Control Room. The procedures described in the ERP and CAIRA as well as the procedures identified below will then be followed. If a non-agent release is encountered, then the first individual to observe the release will do the following:

- Alert other nearby workers and, if outside, move upwind of the release.
- Contact the Control Room, which will then notify the Emergency Coordinator, report the release, location, nature of material spilled (if known), and the estimated amount involved.
- Prevent access to the area by vehicles or other personnel.
- Follow instructions offered by the Emergency Coordinator or the Control Room.

9.8 **EMERGENCY EQUIPMENT [R315-8-4.3(d)]**

[20] Section 9.7.11 of the Contingency Plan will not apply to the RCRA tank systems in the BRA. Section 9.7.10 of the Contingency Plan applies to these tank systems instead.

9.8.1 The implementation of the Contingency Plan will usually require the use of various types of equipment. Much of this equipment will be used during normal (non-emergency) operations at the TOCDF. For instance, vehicles owned by the TOCDF (pickup trucks, fork lifts, etc.), which are not adversely affected in the incident, will be available for use during an emergency. Any maintenance equipment such as hand tools, welders, cranes, hoists, machine shop equipment, steam cleaners, etc. that is not damaged or destroyed in the incident would be available for use during an emergency. In addition to the equipment used during normal operations, equipment specifically intended for emergency response is also available. This equipment includes, but is not limited to, the following communication and alarm systems, spill control and decontamination equipment, and emergency equipment.

9.8.2 **Communication and Alarm Systems**

9.8.2.1 Communications inside the TOCDF will be achieved through a telephone system and public address (PA) system. Telephones are located so that each employee has access to one from his workstation. An employee can call, the Control Room or any other telephone in the TOCDF and can be connected to an outside phone line from site telephones. Employees can access the PA system for paging by using or by contacting designated telephones throughout the site or by contacting the Control Room. The paging system will be broadcast through a series of loudspeakers to provide coverage throughout the active portion of the facility. Two-way radios are also available for onsite communication. The TOCDF is connected to the local telephone system to enable external communications. Alarms will be broadcast over the PA system loudspeakers. The agent and evacuation alarms will be initiated by the Control Room. The alarm for mask and remain-in-place will consist of a warbler tone (oscillating whine) broadcast. The alarm for mask and site evacuation will consist of a steady tone broadcast. Generally, the alarms will be accompanied by instructions from the Control Room which include event-specific instructions.

9.8.2.2 System Design

9.8.2.2.1 TOCDF emergency communications are performed by standard telephone, hotline telephone, cellular phone, radio, and face-to-face contact.

9.8.2.2.2 All Emergency Response Organization members have received training in emergency communications. Common terminology has been developed to assure clear communications. All personnel assigned radios have been trained in the use of those radios. Entry teams have been trained to remain in visual contact with their buddy.

9.8.2.2.3 All communications links are backed up. A minimum of two channels will be available on all radios. Within the areas with the highest probability of emergency incidents (MDB, unpack) emergency phones have been strategically located. If required, the public address system, which is on an uninterrupted power source, could be utilized for one-way emergency communications on site. The system can be addressed to site-wide or specific locations. The system can be accessed through any facility standard telephone.

9.8.2.2.4 The attached Emergency Communications tables show the primary and backup TOCDF communications links (Tables 9-8-1 through 9-8-11). Links beyond the DCD Emergency

Operations Center (DCD EOC) to Army, local, State, and Federal agencies are covered in the TOCDF CAIRA Plan.

Table 9-8-1
TOCDF Emergency Communications
(Control Room)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH Control Room
IC	Face to Face, Radio, Cellular Phone
SCO	Radio, Cellular Phone
TOCDF Clinic	Hotline Phone, Telephone, Radio
DCD Fire Station	Telephone, DCD Radio, Cellular Phone
DCD Site Security Control Center	Telephone, DCD Radio
ECF	Hotline Phone, Telephone, DCD Radio
Plant Systems Operators/Guards	Radio, Telephone
DCD EOC	Hotline Phone, Telephone,Cellular Phone
MAT	Hotline Phone, Telephone, Cellular Phone
PMCD Shift Engineer	Face to Face, Telephone, Cellular Phone
Monitoring Team	Telephone
Accountability Coordinator	Cellular Phone, Telephone
CAL	Telephone, Cellular Phone
Stark Road Offices	Telephone
Area 2 Warehouses	Cellular Phone
Receiving Warehouse and Transfer Yard	Telephone, Cellular Phone

Table 9-8-2
TOCDF Emergency Communications
(Incident Commander)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH INCIDENT COMMANDER
Control Room	Face to Face, Radio, Cellular Phone
SCO	Radio, Cellular Phone, Face to Face
Safety Advisor	Radio, Cellular Phone, Face to Face
Environmental Advisor	Radio, Cellular Phone, Face to Face
PMCD Shift Engineer	Face to Face, Telephone, Cellular Phone
DCD EOC	Hotline Phone, Telephone, Cellular Phone
MAT	Hotline Phone, Telephone, Cellular Phone

Table 9-8-3
TOCDF Emergency Communications
(Scene Control Officer)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH SCENE CONTROL OFFICER
Control Room	Radio, Cellular Phone
IC	Radio, Cellular Phone, Face to Face
Safety Advisor	Face to Face, Radio, Cellular Phone
Environmental Advisor	Face to Face, Radio, Cellular Phone
HAZMAT Team Leader	Face to Face, Radio
Decon Team Leader	Face to Face, Radio
Paramedic Team Leader	Face to Face, Radio
Rescue Team Leader	Face to Face, Radio
DCD Senior Fire Officer	Face to Face, DCD Radio

Table 9-8-4
TOCDF Emergency Communications
(HAZMAT Team Leader)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH HAZMAT TEAM LEADER
SCO	Face to Face, Radio
HAZMAT Team Members	Radio, Face to Face
Decon Team Leader	Face to Face, Radio
Paramedic Team Leader	Face to Face, Radio
Rescue Team Leader	Face to Face, Radio

Table 9-8-5
TOCDF Emergency Communications
(Decon Team Leader)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH DECON TEAM LEADER
SCO	Face to Face, Radio
Decon Team Members	Face to Face
HAZMAT Team Leader	Face to Face, Radio
Paramedic Team Leader	Face to Face, Radio
Rescue Team Leader	Face to Face, Radio

Table 9-8-6
TOCDF Emergency Communications
(Rescue Team Leader)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH RESCUE TEAM LEADER
SCO	Face to Face, Radio
Rescue Team Members	Radio, Face to Face
HAZMAT Team Leader	Face to Face, Radio
Decon Team Leader	Face to Face, Radio
Paramedic Team Leader	Face to Face, Radio

Table 9-8-7
TOCDF Emergency Communications
(Paramedic Team Leader)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH PARAMEDIC TEAM LEADER
SCO	Face to Face, Radio
Paramedics	Face to Face, Radio
HAZMAT Team Leader	Face to Face, Radio
Decon Team Leader	Face to Face, Radio
Rescue Team Leader	Face to Face, Radio
TOCDF Clinic	Radio
Army Ambulance	Face to Face, DCD Radio
Regional Ambulance	Face to Face, Radio

Table 9-8-8
TOCDF Emergency Communications
(TOCDF Clinic)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH TOCDF CLINIC
Paramedic Team Leader	Radio
DCD EOC	Telephone, DCD Radio
Army Ambulance	DCD Radio
Army Clinic	Telephone, DCD Radio
Regional Ambulance	Telephone, Radio
Regional Hospital	Telephone, Radio
Control Room	Hotline Phone, Telephone, Radio

Table 9-8-9
TOCDF Emergency Communications
(Management Advisory Team)

EMERGENCY RESPONDER/ORGANIZATION	METHODS OF COMMUNICATION WITH MANAGEMENT ADVISORY TEAM
Control Room	Telephone, Cellular Phone
IC	Telephone, Cellular Phone
DCD EOC Staff	Face to Face
PMCD-E	Telephone, Cellular Phone
EG&G/Battelle Corporate	Telephone, Cellular Phone

Table 9-8-10 TOCDF Emergency Communications (Entry Control Facility)	
EMERGENCY RESPONDER/ORGANIZATION	**METHODS OF COMMUNICATION WITH ENTRY CONTROL FACILITY**
Control Room	Hotline Phone, Telephone, DCD Radio
DCD Site Security Control Center	DCD Radio, Telephone

Table 9-8-11 TOCDF Emergency Communications (Accountability Coordinator)	
EMERGENCY RESPONDER/ORGANIZATION	**METHODS OF COMMUNICATION WITH ACCOUNTABILITY COORDINATOR**
Control Room	Cellular Phone, Telephone

9.8.2.2.5 During drills and exercises, communications are typically prefaced by and ended with "This is a test exercise message".

9.8.2.3 Control Room

9.8.2.3.1 The TOCDF Control Room is the communications center for emergency response. The Control Room has engineering controls, which isolate it in the event of an emergency. It is manned 24 hours a day, 7 days a week, and has backup emergency power. The Control Room contains the following communications equipment: standard phones, hotline phones, a cellular phone, radio base stations each covering all TOCDF channels, a radio base station covering all DCD channels, e-mail, and a fax machine.

9.8.2.3.2 In an emergency, specific Control Room Operators are assigned to act as phone contacts with specific response teams. Specific operators are assigned to each of the following groups: IC if he is in a field location, SCO, Clinic, MAT, and EOC. The operators who are not assigned to one of these specific response teams will handle all other communications. These remaining groups will normally have limited communications requirements. If for any reason the communications needs of a group expand, a specific operator will be assigned.

9.8.3 **Spill Control and Decontamination Equipment**

9.8.3.1 TOCDF has trained personnel and a variety of equipment and supplies available onsite for responding to spills and decontamination. The HAZMAT and Decontamination Teams are staffed by trained on-shift personnel around the site and are primarily

composed of Maintenance and Operations personnel. The HAZMAT Team performs victim rescue, containment, mitigation, and clean-up activities during TOCDF emergency events involving the release of chemical agent or industrial chemicals. The Decon Team performs associated personnel decontamination.

9.8.3.2 HAZMAT and Decon Response Teams' resources include a Decon Trailer, HAZMAT Van, Emergency Decon Station, Buildings S-1 and S-5, and the DPE Support Area (DSA). The HAZMAT Van and Decon Trailer are stationed inside Building S-1. All HAZMAT response equipment and supplies located in the HAZMAT Van and Decon Trailer are inspected on a regular basis as specified in Attachment 5 (Inspection Plan). Lists of equipment that must be maintained on the HAZMAT Van and Decon Trailer can be found in the Inspection Log section of Attachment 5 (Inspection Plan).

9.8.3.3 The Decon Trailer contains PPE and all equipment and supplies necessary to perform personnel decontamination. The Decon Trailer inspection log identifies equipment and supplies available on the Decon Trailer. The Decon Trailer has one fixed rinse shower and one portable decon shower. A TOCDF truck is used to move the Decon Trailer to the scene.

9.8.3.4 The HAZMAT Van is stocked with PPE and all equipment and supplies necessary to respond to hazardous spills and emergency decontamination. The HAZMAT Van inventory inspection log identifies equipment and supplies available on the HAZMAT Van.

9.8.3.5 Emergency Decon Stations house additional gear and are located along the most probable routes of egress in an emergency. Each Emergency Decon Station contains all the equipment and supplies necessary to support personnel decontamination, a Spill Control Kit, and Chemical Casualty Kits. Spill Control Kits contain extra absorbent socks used in containing decon solution run-off. The Chemical Casualty Kit contain medical supplies. Table 9-8-12 identifies the equipment and supplies available in a Emergency Decon Station.

Table 9-8-12
EMERGENCY DECON STATIONS

ITEM	QUANTITY
Coveralls	10 pair
Socks	10 pair
Tee-shirts	10 pair
Underwear (men/women)	10 pair
Towels	10
Hard Sole Boots	10 pair
Blankets	5

Table 9-8-12
EMERGENCY DECON STATIONS

ITEM	QUANTITY
Butyl Gloves	10 pair
Scissors	2 pair
Belt Cutter	1
Decon Solution (bleach)	6 gallons
Step Pans	1 water, 1 decon
Chemical Casualty Kits	2
Spill Control Kit	1

9.8.4 **Emergency Equipment**

9.8.4.1 Fire Extinguishing Equipment

9.8.4.1.1 Sprinklers and Halon systems are capable of operating automatically to extinguish fires in the areas in which they have been placed. These areas include the UPA (sprinklers) and areas where electronic equipment is in use (Halon). Portable fire extinguishers are available throughout the facilities and are capable of extinguishing small fires. The facility structure is designed to be fire-resistive. An automatic detection and alarm system is placed throughout the facility. Fire response forces have available portable extinguishers, a complete site firewater distribution system, and emergency response equipment similar to that of a municipal fire department.

9.8.4.2 Emergency Personal Protective Equipment

9.8.4.2.1 *Emergency Personal Protective Equipment Overview*

9.8.4.2.1.1 This plan section presents an overview of how the PPE available at TOCDF will be utilized by personnel responding to a release event of chemical agent or industrial chemicals. Response to an agent release will require use of Army PPE by responders entering toxic or contaminated areas. The general work force is required to don Army air purifying respirators (Mask) immediately upon notification of any unusual event that could result in a release of agent. All personnel who enter the TOCDF site are trained in the use of, have issued to them, and are required to be prepared to use an Army protective mask. The use of the Army mask is for egress only in the event of an agent release. Response to industrial chemical releases and spills require the wearing of OSHA PPE.

9.8.4.2.1.2 The TOCDF facility was designed and constructed with the overriding consideration that "The use of personal protective equipment (PPE) is the least desirable method of exposure control." Based on hazard analyses, the reduction of dependence upon PPE was designed into all areas and operations of the TOCDF.

9.8.4.2.1.3 The TOCDF conducts operations in areas where no amount of design and engineering can alleviate the requirements to wear PPE. These requirements for wearing PPE are dependent on a number of factors that include the type of operations performed in an area and the likelihood of the presence of agent during normal or abnormal conditions. Selection of the appropriate level of protection is determined by the potential level of exposure/contamination that exists in the specific environment and the task to be performed.

9.8.4.2.2 *Chemical Agent Ventilation/Hazard Categories*

9.8.4.2.2.1 Each room in the MDB has a designated category rating of A, B, C, D, or E based upon the potential for agent contamination during normal munitions and support operations. Categories may be temporarily upgraded to correspond with increased hazard potential.

9.8.4.2.2.1.1 Rooms assigned a Category A rating have probable agent liquid and likely vapor contamination.

9.8.4.2.2.1.2 Rooms assigned a Category A/B are evaluated for contamination probability depending on the operations being performed and the materials present.

9.8.4.2.2.1.3 Rooms with a Category B rating have possible vapor contamination only resulting from routine operations.

9.8.4.2.2.1.4 Rooms with a Category C rating have a low probability of agent vapor contamination.

9.8.4.2.2.1.5 Rooms with a Category D rating have a very low probability of ever being contaminated by agent.

9.8.4.2.2.1.6 Rooms and areas with a category E rating are maintained from being contaminated by agent at all times barring the possibility of a catastrophic event.

9.8.4.2.3 *TOCDF Descriptions of Personal Protective Equipment Ensembles*

9.8.4.2.3.1 Level A (A1-A2) clothing is used for entry into agent toxic areas with agent vapor and liquid present based on the OSHA and Army criteria for chemical agent activity. Level A provides positive pressure, full-face, self-contained breathing apparatus (SCBA), or positive pressure supplied air line respirator with self-contained escape air supply, approved by NIOSH, and totally encapsulating, vapor tight, chemical protective suit. The Demilitarization Protective Ensemble (DPE) suit (Level A1) is normally used within the agent areas of the Munitions Demilitarization Building. In any of these areas where an emergency occurs, the DPE suit is worn unless the emergency conditions themselves preclude the use of the suit. In those circumstances, M3 B (B1) (formerly known as Modified Level A) or OSHA Level A protective clothing is used. This equipment is available at the Demilitarization Protective Ensemble Support Area (DSA) in the Personnel Maintenance Building. (PMB)

9.8.4.2.3.2 M3 B (B1) (formerly known as Modified Level A) or OSHA A clothing is the highest level of protection available at the site, excluding the DPE suit. OSHA A or M3 B (B1) may be used in the presence of liquid when conditions prohibit DPE, when needed to resotre the plant to normal conditions, or as the primary PPE for DPE backup. It will be

used for munitions handling or other tasks based on OSHA and Army criteria for chemical agent activity.

9.8.4.2.3.3 Level B Protective Clothing-Level B (B1-B5) provides positive pressure, full-face Self-Contained Breathing Apparatus (SCBA), or positive pressure supplied air line respirator with self-contained escape air supply, approved by NIOSH, and non-encapsulating chemical protective clothing. It will be used for munitions handling or other tasks based on OSHA and Army criteria for chemical agent activity.

9.8.4.2.3.4 Level C Protective Clothing – Level C (C1-C6) provides an air purifying full-face respirator or protective mask and non-encapsulating chemical protective clothing. It will be used for entry into agent toxic areas with agent vapor only (no liquid) based on OSHA and Army criteria for chemical agent activity.

9.8.4.2.3.5 Level D – Level D provides mask or respirator slung or readily available and employer provided clothing. It will be used for entry into agent toxic areas where no vapor is present or anticipated at TOCDF based on OSHA and Army criteria for chemical agent activity.

9.8.4.2.3.6 Street Clothes (SC) – This level consists of personal clothing with Mask Available and is for areas at TOCDF where no respiratory protection or chemical protective clothing is needed.

9.8.4.2.4 *Selection of PPE*

9.8.4.2.4.1 Chemical Agent Release

9.8.4.2.4.1.1 When responding to a chemical agent release, the level of protection required will be determined for each operation. Conditions under which the various levels of protection are required are described along with the PPE descriptions in the section above.

9.8.4.2.4.2 Industrial Chemical Release

9.8.4.2.4.2.1 When responding to an industrial chemical release, the correct level of PPE is selected by the Scene Control Officer (SCO) with approval of the Safety Advisor. The TOCDF Hazard Guide, MSDS sheets for the chemical involved, the NIOSH "Personal Protective Equipment for Industrial Chemicals Incidents: A Selection Guide", and the DOT Emergency Response Guidebook are references used in determining this selection. The PPE selection made by the SCO will also consider the work requirements of the entry to ensure the durability of the PPE is appropriate to that work.

9.8.4.3 <u>Medical Emergency Equipment</u>

9.8.4.3.1 The following emergency medical equipment is to be available at the facility's medical clinic. The clinic is responsible for assuring that the following equipment is available and operational.

- Ambulance bags (Jump Kits)
- Oxygen Cylinders

- Defibrillator
- Litters
- Mark 1 Autoinjectors (Nerve Agent Antidote Kit)
- Protective Clothing
- Protective Masks
- Ambulance/Vehicle for transporting casualties

9.8.4.4 Showers and Eyewash Facilities

9.8.4.4.1 Safety showers, decontamination showers, and eyewash stations are located in appropriate areas of the MDB (Figures 9-8-1 through 9-8-4), the PUB (Figure 9-8-5), the PAS (Figure 9-8-6), and the CHB (Figure 9-8-7). All figures are located at the end of the Contingency Plan.

9.8.4.5 Agent Detection Equipment

9.8.4.5.1 Agent munitions and alarms are present in each agent work area. The type of monitors used varies based on the agent being processed. The alarms/indicators consist of visual (rotating beacons or panel lamps) and audible alerts (horns). Instructions are given from the Control Room via the public address system to inform personnel as to what actions to take following an agent alarm.

9.8.4.6 Decontamination Solution

9.8.4.6.1 For liquid spills of GB, Sodium Hydroxide solution is used for decontamination. For liquid spills of VX or Mustard, dilute Sodium Hypochlorite is used for decontamination. The appropriate solution is available throughout the facility based on chemical agent being processed. The location is specific to each appropriate area of the facility.

9.8.4.7 Confined Spaces Entry Equipment

9.8.4.7.1 The equipment required for Confined Space Entry will be available and maintained at the PMB, Building S-6, or in the response vehicle. This includes a combustible gas indicator, an oxygen-sensing device, and self-contained breathing apparatus.

9.8.4.8 Offsite Equipment

9.8.4.8.1 *Firefighting Equipment*

9.8.4.8.1.1 Fire protection, emergency equipment, and DCD support organizations are detailed in Section 9.9

9.8.4.8.2 *Heavy Equipment*

9.8.4.8.2.1 Supplemental heavy equipment and supplies will be available, if needed, from offsite sources including Tooele Army Depot (TEAD) and DCD. Table 9-8-13 lists the emergency equipment available at the DCD and TEAD.

Table 9-8-13
DESERET CHEMICAL DEPOT (DCD) AND TEAD EMERGENCY EQUIPMENT

NOMENCLATURE	CAPABILITY	QUANTITY	LOCATION
Fire Trucks	1,000 gpm pumper	1	DCD Fire Station (Bldg 5010)
	Brush truck, 1,000-gallon capacity, 200 gpm pump	1	DCD Fire Station (Bldg 5010)
	Equipment truck, 2-ton pickup	1	DCD Fire Station (Bldg 5010)
	Crash truck for helicopter crash response; with foam, dry chemical water capabilities (NOTE: This vehicle doubles as 1,000-gallon pumper truck listed above.)	1	DCD Fire Station (Bldg 5010)
Ambulances	Emergency personnel evacuation and medical support	4	CAMDS (1) TOCDF (1) DCD (2) Bldg 5010 (2)
Bulldozer	Caterpillar type for brushfire, control, spill cleanup, general grading	1	Behind Building 134 (TEAD)
Loader, Scoop	1-2 yd^3 capacity, front-end type; for spill cleanup, etc.	1	Behind Building 134 (TEAD)
Backhoe	Wheeled type tractor-mounted; for ditch digging and excavation	1	Behind Building 134 (TEAD)

Table 9-8-13
DESERET CHEMICAL DEPOT (DCD) AND TEAD EMERGENCY EQUIPMENT

NOMENCLATURE	CAPABILITY	QUANTITY	LOCATION
Hand Tools (shovels, brooms, etc.)[21]	Small spill cleanup	as available	Container storage buildings Building 516 (TEAD)
Distributor, Water Tank	1,000 gallon with pump	1	Building 516 (TEAD)
Auger, Earth	Boring up to 24-inch holes	1	Building 516 (TEAD)
Excavator, Multipurpose	Backhoe type excavation	1	Building 516 (TEAD)
Tractor	Caterpillar-type for ditch digging, backhoe capabilities, etc.	10	Building 516 (TEAD)
Grader, Road	Road grading, ditch cleaning, etc., with 12-foot blade	5	Building 516 (TEAD)
Loader, Scoop	1-2 $yard^3$ capacity, front-end type	2	Building 516 (TEAD)
Crane, Shovel	1 $yard^3$ capacity for loading sand and gravel	1	Crusher area (TEAD)
Crane, Hydraulic	25-ton for major item material handling	1	Building 516 (TEAD)
Truck, Dump	5 $yard^3$ capacity for handling and dumping	7	Building 516 (TEAD)
Truck/Pickup	For general purpose transportation	2	Building 516 (TEAD)
Crane, Clamshell and Dragline	13-ton capacity	1	Building 516 (TEAD)

[21] A minimum of one shovel and one broom are kept at each container storage building.

Table 9-8-13
DESERET CHEMICAL DEPOT (DCD) AND TEAD EMERGENCY EQUIPMENT

NOMENCLATURE	CAPABILITY	QUANTITY	LOCATION
Hand Tools (shovels, brooms, etc.)[21]	Small spill cleanup	as available	Container storage buildings Building 516 (TEAD)
Distributor, Water Tank	1,000 gallon with pump	1	Building 516 (TEAD)
Auger, Earth	Boring up to 24-inch holes	1	Building 516 (TEAD)
Excavator, Multipurpose	Backhoe type excavation	1	Building 516 (TEAD)
Tractor	Caterpillar-type for ditch digging, backhoe capabilities, etc.	10	Building 516 (TEAD)
Grader, Road	Road grading, ditch cleaning, etc., with 12-foot blade	5	Building 516 (TEAD)
Loader, Scoop	1-2 $yard^3$ capacity, front-end type	2	Building 516 (TEAD)
Crane, Shovel	1 $yard^3$ capacity for loading sand and gravel	1	Crusher area (TEAD)
Crane, Hydraulic	25-ton for major item material handling	1	Building 516 (TEAD)
Truck, Dump	5 $yard^3$ capacity for handling and dumping	7	Building 516 (TEAD)
Truck/Pickup	For general purpose transportation	2	Building 516 (TEAD)
Crane, Clamshell and Dragline	13-ton capacity	1	Building 516 (TEAD)

[21] A minimum of one shovel and one broom are kept at each container storage building.

9.9 COORDINATION AGREEMENTS AND SUPPORT ORGANIZATIONS[R315-8-4.3(b), R315-8-3.7]

9.9.1 Coordination Agreements Overview

9.9.1.1 TOCDF, through DCD, has made contact with the local and regional entities and authorities, which may be involved, in an emergency situation at the facility. Each of these authorities have been provided with a copy of the current TOCDF Emergency Response Plan (TOCDF ERP) and relevant background information. A copy of this updated TOCDF Contingency Plan, along with the TOCDF CAIRA Plan is provided to each of these authorities upon approval.

9.9.1.2 Discussions regarding their specific involvement and coordination have been held.

9.9.1.3 The US Army, as owner and co-operator of TOCDF has contacted the following local authorities to obtain emergency response and/or mutual assistance and support agreements for the DCD and the TOCDF site.

9.9.1.4 The following agreements are in place and on file at the TOCDF.[22]

- Tooele County Sheriff's Office (27 May 1997)
- North Tooele County Fire District (11 August 1998)
- City of Stockton Fire Department (11 August 1998)
- City of Tooele Fire Department (11 August 1998)
- City of Grantsville Fire Department (11 August 1998)
- Tooele Valley Regional Medical Center (7 March 1999)
- Salt Lake Regional Medical Center (7 March 1999)
- Utah Valley Regional Medical Center (7 March 1999)
- LDS Hospital (7 March 1999)
- University of Utah Medical Center AirMed (15 January 1998)
- Intermountain Health Care (IHC) Life Flight (15 January 1998)
- University of Utah Hospital (7 March 1999)

9.9.1.5 DCD is the main provider of non-TOCDF resources during an emergency. As a tenant of the DCD installation, TOCDF utilizes a number of emergency support services located

[22] Copies of the agreements are found at the back of this section.

on the installation. For most accident scenarios, installation resources are the only support required, with the exception of advanced medical treatment. TOCDF provides first-level emergency medical care, but regional hospital support is required for casualties in need of advanced life support.

9.9.1.6 Non-TOCDF resources are requested through the DCD Emergency Operations Center (EOC) located at DCD Building 5108, except for urgent DCD Security and DCD Fire Station resources, which may be requested directly by the Control Room. Additional local, State, and Federal resources are available in the event of a major disaster. All local, State, and Federal notifications and resource requests will be made by DCD. The CAICO identifies and recommends the outside resources needed to the DCD Commander, who in turn establishes liaison with the provider to obtain them.

9.9.2 **DCD Support**

9.9.2.1 General

9.9.2.1.1 DCD, under the command of Soldier and Biological Chemical Command (SBCCOM), is the host installation for TOCDF. DCD maintains its own response force to handle chemical accidents/incidents involving DCD operations. CAMDS response teams have been established to augment the DCD force as needed. TOCDF response teams may also be called upon to support an emergency on the installation. The DCD resources available to support TOCDF emergency response are described below. DCD resources are under the command and control of the EOC on a daily basis. In the event TOCDF requires DCD resources, the Control Room will request them directly from the EOC, with the possible exception of initial DCD Security response.

9.9.2.2 DCD Security

9.9.2.2.1 The DCD Law Enforcement and Security Division (Security) is the sole provider of security services to TOCDF on a daily basis. In the event of an emergency at TOCDF, Security will:

- ensure the safeguarding of chemical surety materiel and TOCDF property
- provide perimeter control assistance and limit access to authorized personnel
- capture intruders
- implement rapid entry/exit procedures for responders and evacuating personnel.

9.9.2.2.2 Security personnel are under the command and control of the Site Security Control Center (SSCC).

9.9.2.3 Real Time Analysis Platforms (RTAPs)

9.9.2.3.1 TOCDF monitoring personnel conduct agent monitoring at the facility using fixed ACAMS and DAAMS stations located primarily inside the CHB, MDB, CAL, and associated exhaust stacks. In the event of a chemical agent release outside a normally-

monitored area, TOCDF does not have the necessary portable equipment to perform airborne monitoring in these areas, and therefore will require agent monitoring support.

9.9.2.3.2 DCD maintains Real Time Analysis Platform (RTAP) capability to support its daily chemical storage operations. The RTAP is a self-contained mobile platform, which can be moved from location to location to perform low-level, near real-time agent monitoring. Each RTAP includes a monitoring technician, a van with an ACAMS/MINICAMS, and a portable radio. RTAPs may be deployed individually or in support of DCD response teams, such as a Met/Det Team or the Hotline Crew.

9.9.2.4 DCD Meteorological/Detection Teams (Met/Det)

9.9.2.4.1 DCD has Meteorological/Detection Teams (Met/Det) Teams available to perform initial entry, wind measurement, and agent detection activities. Each Met/Det Team includes at least two persons each with Army Level A and B protective clothing, available SCBA respiratory protection, a truck, portable radio, chemical casualty kit, decontamination solution, gross-level nerve agent detectors/alarms, and a wind measuring instrument. Upon deployment of a Met/Det Team, a RTAP accompanies the team to perform low-level agent monitoring.

9.9.2.5 DCD Hotline Crew

9.9.2.5.1 DCD has a Hotline Crew available to perform personnel decontamination at the event scene. The Hotline Crew includes personnel and a mobile Personnel Decontamination Station (PDS) consisting of a tractor and a decon-ready trailer. The mobile PDS is a totally self-contained, environmentally controlled, runoff-capturing hotline in a trailer, which can be moved from location to location to perform personnel decontamination.

9.9.2.6 DCD Decontamination Teams

9.9.2.6.1 DCD has Decontamination Teams available to perform decontamination of personnel and agent-contaminated surfaces such as property and equipment. Each Decontamination Team includes DCD personnel each with Army Level A and B protective clothing, a flatbed truck with a generator and decontamination tank, portable radio, and decontamination tools. DCD pre-assigns one Decontamination Team for rapid deployment to an event scene to perform emergency actions such as personnel decontamination, spill confinement, and surface decontamination.

9.9.2.7 Emergency Operations Center (EOC)

9.9.2.7.1 The Emergency Operations Center (EOC) is a fully-equipped emergency facility maintained by DCD and located at DCD Building 5108. The EOC is staffed 24 hours a day, 7 days a week, and is the primary point of contact for performing off-post notifications and obtaining resource support, including DCD, CAMDS, TEAD, and outside support. The DCD Commander is the Initial Response Force (IRF) Commander during a chemical accident/incident response and operates from the EOC. The CAICO also operates from the EOC and maintains direct contact with the ACAICO in the field.

9.9.2.7.2 After the initial confirmed detection of an actual or likely chemical agent release at the DCD installation, the DCD Commander or designee must classify the event; determine

the protective action recommendation for off-post populations; and report the aforementioned items to the Tooele County Sheriff Dispatch Center. The DCD Commander or designee will notify local, State, and Federal organizations required by regulation, mutual agreement, or response requirements; obtain emergency medical support, as required; and execute public affairs activities related to the event.

9.9.2.7.3 TOCDF has one bus available for personnel evacuation. In the event of a site-wide evacuation of TOCDF personnel, up to five busloads of evacuees may require transportation from a TOCDF muster area to a DCD assembly area. DCD will provide the additional buses needed to fill the transportation shortfall. During a chemical accident/incident, all buses on the DCD installation are under the control of the CAICO, who will plan and direct any evacuation to DCD assembly areas. The Control Room requests transportation support from the EOC.

9.9.2.7.4 In the event the primary EOC facility is within the down-wind hazard area, DCD command staff will activate and operate from their Mobile Command Post, and other EOC staff will operate from the Support Center located at TEAD Building T-1. Upon EOC activation due to an event at TOCDF, the Management Advisory Team (MAT) will deploy to the EOC to provide technical assistance to EOC staff. TOCDF will maintain and provide to DCD a current roster of MAT members authorized to access the EOC.

9.9.2.8 DCD Fire Station

9.9.2.8.1 The DCD Fire Station, located on the DCD installation, is the primary provider of fire fighting services and the backup provider of rescue and HAZMAT response services to TOCDF. The DCD Fire Station is a fully-equipped fire fighting station staffed 24 hours a day, 7 days a week. The DCD Fire Station is located approximately 3.5 miles from TOCDF in DCD Building 5010 and has an expected arrival time of 8 - 10 minutes. In the event of a fire emergency, the Control Room will contact the DCD Fire Station directly for fire fighting services. Once the DCD EOC is activated, the Control Room will request fire-fighting services through the EOC.

9.9.2.8.2 Upon a TOCDF fire alarm, the DCD Fire Station receives only a general alarm for the TOCDF site. The Control Room then informs the DCD Fire Station of the particular zone(s) in alarm and confirms the alarm prior to fire fighter deployment. Once deployed, TOCDF will guide fire personnel to the scene and brief them on the event, structure layout, and hazards present. The senior DCD fire officer on scene will direct all fire fighting activities at TOCDF.

9.9.2.8.3 In addition to fire fighting skills, DCD fire personnel are trained and certified in rescue operations and as Hazardous Material Technicians in accordance with OSHA 29 CFR 1910.120. In an event involving hazardous industrial chemicals, DCD fire personnel will supplement TOCDF HAZMAT resources as required. A fully staffed and equipped TOCDF HAZMAT Team is on site 24 hours a day, 7 days a week. The Control Room requests DCD HAZMAT support through the DCD Emergency Operations Center.

9.9.3 **Chemical Agent Munition Disposal System (CAMDS) Support**

9.9.3.1 General

9.9.3.1.1 The Chemical Agent Munitions Disposal System (CAMDS), under the command of the PMCD, is a disposal research facility operated by the government. CAMDS is located immediately adjacent to the TOCDF CAL, about 1.5 miles southwest of the TOCDF site. CAMDS is an operating chemical munitions disposal facility used for research and development of munitions disposal techniques and for incineration of a limited quantity of known unserviceable munitions.

9.9.3.1.2 CAMDS has its own emergency response organization, including a medical facility. CAMDS responders will supplement TOCDF teams for an emergency at TOCDF on an as-needed basis. CAMDS response teams are organized to augment DCD resources in the event of a chemical accident/incident at DCD, and therefore resemble DCD response teams in composition. In addition to chemical accident/incident readiness, CAMDS response personnel are also trained and certified as Hazardous Material Technicians in accordance with OSHA 29 CFR 1910.120, but do not have the OSHA levels of PPE needed to respond to industrial chemical releases.

9.9.3.1.3 CAMDS resources available to support TOCDF emergency response are described below. In the event CAMDS resource support is needed, the Control Room will request it through the DCD Emergency Operations Center.

9.9.3.2 CAMDS Area Response Teams

9.9.3.2.1 CAMDS has Area Response Teams available to support initial entry activities at the CAMDS site and DCD areas. Each Area Response Team includes personnel with Army Level A and B protective clothing, a truck, portable radio, chemical casualty kit, decontamination solution, and gross-level nerve agent detectors/alarms.

9.9.3.3 CAMDS Meteorological/Detection Teams (Met/Det)

9.9.3.3.1 CAMDS has Met/Det Teams available to perform initial entry, wind measurement, and agent detection activities. Each Met/Det Team includes personnel with Army Level A and B protective clothing, a truck, portable radio, chemical casualty kit, decontamination solution, gross-level nerve agent detectors/alarms, and a wind measuring instrument.

9.9.3.4 CAMDS Hotline Crew

9.9.3.4.1 CAMDS has one Hotline Crew available to support personnel decontamination on the installation. The Hotline Crew includes approximately eight CAMDS personnel and a flatbed truck with a mounted Single Pallet Only Rocket Transporter (SPORT).

9.9.4 **TEAD Support**

9.9.4.1 General

9.9.4.1.1 Tooele Army Depot (TEAD), under the Installation Operations Command (IOC), is located approximately 15 miles north of TOCDF and 2 miles southwest of the City of Tooele. TEAD maintains resources to support a chemical accident/incident response at the DCD installation. The TEAD resources available to support TOCDF emergency response are described below. In the event TOCDF requires TEAD support, the Control

Room will request it through the EOC, with the possible exception of initial TEAD Fire Department response.

9.9.4.2 TEAD Fire Station

9.9.4.2.1 The TEAD Fire Station, located on the TEAD installation, is the backup provider of fire fighting services to TOCDF. It is a fully-equipped fire fighting station staffed 24 hours a day, 7 days a week. The TEAD Fire Station is located approximately 15 miles north of TOCDF and has an expected arrival time of 30 minutes. The TEAD Fire Station will supplement the DCD Fire Station resources.

9.9.4.3 TEAD Public Works

9.9.4.3.1 TEAD Public Works dispatches a representative to the Support Center to coordinate TEAD equipment support to the DCD installation.

9.9.4.4 Support Center

9.9.4.4.1 The Support Center is a fully-equipped emergency support facility maintained by TEAD. The Support Center is the primary point of contact for coordinating all TEAD resource support to DCD during a chemical accident/incident. The TEAD Commander is the Support Center Commander and operates from the Support Center. The TEAD Commander or designee will provide all aspects of logistical support to DCD, including transportation, equipment, and facility support.

9.9.5 **Medical Support**

9.9.5.1 General

9.9.5.1.1 Medical services at both the DCD and TEAD installations, with the exception of TOCDF, are provided and managed by Evans Army Community Hospital based at Fort Carson, Colorado. Evans Army Community Hospital staffs and equips the TEAD Health Clinic, DCD Aid Station, and CAMDS Medical Module. Resources from these facilities are available to support a TOCDF medical response, if necessary.

9.9.5.1.2 In the event of multiple casualties requiring ground or air transport to definitive care facilities, medical resources other than Army support will be needed. Medical support, including Army resources, will be requested through the EOC to ensure there are no logistical impairments. The Medical Clinician In Charge (MCIC) of the TOCDF Clinic will make the initial request to the EOC, and once arrangements are made, will discuss the ETA and medical details directly with the medical support provider. Likewise, requests by DCD or CAMDS for TOCDF medical support on the DCD installation will be made through the EOC.

9.9.5.2 Aid Station (DCD)

9.9.5.2.1 The Aid Station, located on the DCD installation, is the first backup provider of emergency medical services to TOCDF. It is a fully-equipped emergency medical station maintained by Evans Army Community Hospital. The Aid Station is located approximately 3.5 miles from TOCDF in DCD Building 5010 and has an expected arrival

time of 8 - 10 minutes. Aid Station resources include two ambulances with advanced life support equipment and a minimum of two Emergency Medical Technicians (EMTs) on duty 24 hours a day, seven days a week.

9.9.5.3 CAMDS Medical Module

9.9.5.3.1 The CAMDS Medical Module, located on the DCD installation, is the second backup provider of emergency medical services to TOCDF. It is a fully-equipped emergency medical station maintained by Evans Army Community Hospital. The CAMDS Medical Module is located approximately 1.5 miles from TOCDF at the CAMDS site and has an expected arrival time of 8 minutes. CAMDS Medical Module resources include one ambulance with advanced life support equipment and two paramedics on duty 24 hours a day, Monday-Thursday (during CAMDS toxic operations).

9.9.5.4 U.S. Army Health Clinic (TEAD)

9.9.5.4.1 The Health Clinic, located on the TEAD installation, is the third backup provider of emergency medical services to TOCDF. It is a fully-equipped emergency medical station maintained by Evans Army Community Hospital. The Health Clinic is located approximately 15 miles from TOCDF and has an expected arrival time of 30 minutes. Health Clinic resources include two physicians, two ambulances with advanced life support equipment, and a minimum of two EMTs (Monday-Thursday, 0630-1700 hours only).

9.9.5.5 Dugway Proving Ground

9.9.5.5.1 Dugway will supply one ambulance with a physician and two EMS personnel if requested, with an expected arrival time of 50 minutes.

9.9.5.6 Air Ambulance Services

9.9.5.6.1 Air ambulances will provide air evacuation for casualties, when this can be done without endangering their personnel. Air ambulances will be requested directly by the MCIC through the EOC. The Control Room will be notified of this action immediately. Air ambulance services, which may be used, include: Life Flight (LDS Hospital) and AirMed (University Hospital).

9.9.5.7 LDS Hospital

9.9.5.7.1 Severely ill or injured patients may be transported by air or ground ambulance to LDS Hospital. LDS Hospital should be utilized for general trauma, shock trauma, closed head injury, and may be used for chemical casualties.

9.9.5.8 University Hospital

9.9.5.8.1 Severely ill or injured patients may be transported by air or ground ambulance to University Hospital. University Hospital is the hospital of choice for chemical casualties and burn trauma. University Hospital should also be utilized for general trauma, closed head or spine injuries, and as a backup for shock trauma.

9.9.5.9 Tooele Valley Regional Medical Center

9.9.5.9.1 Patients who are ill or injured to a lesser degree may be transported by ground ambulance to Tooele Valley Regional Medical Center.

9.9.5.10 Utah Valley Regional Medical Center

9.9.5.10.1 Patients who are ill or injured to a lesser degree may be transported to Utah Valley Regional Medical Center in Provo.

9.9.5.11 Salt Lake Valley Regional Medical Center

9.9.5.11.1 Patients who are ill or injured to a lesser degree may be transported to Salt Lake Valley Regional Medical Center.

9.9.6 **62nd Explosive Ordnance Disposal (EOD) Detachment**

9.9.6.1 In an emergency event involving unexploded ordnance or other potential explosion situations, the EOD Detachment will be required to respond to TOCDF. The U.S. Army EOD Detachment is the primary response group for events that require Render Safe Procedures. The EOD Detachment is only dispatched via the EOC.

9.9.7 **Community Fire Support**

9.9.7.1 Tooele City Fire Department

9.9.7.1.1 In the event the TEAD Fire Department needs assistance, the Tooele City Fire Department will provide fire-fighting support. Estimated arrival time from Tooele is 45 minutes.

9.9.7.2 Stockton Fire Department

9.9.7.2.1 The Stockton Fire Department is the closest off-post responder. Stockton Fire Department is all-volunteer fire fighting service. Anticipated mobilization time is approximately 30 minutes.

9.9.7.3 Grantsville Fire Department

9.9.7.3.1 The Grantsville Fire Department will provide a fourth level of fire fighting backup, if needed.

9.9.7.4 Tooele County Fire Department

9.9.7.4.1 In the event the TEAD Fire Department needs assistance, the Tooele County Fire Department will provide fire-fighting support. Estimated arrival time from Tooele is 45 minutes.

9.9.7.5 Volunteer Fire Departments

9.9.7.5.1 The following Fire Departments may respond to any fire emergency to the best of their ability. Due to the volunteer nature of their agency and the departments' limited capability, no written agreement can be entered into.

- Town of Rush Valley Volunteer Fire Department and Ambulance Quick Response Unit (QRU).
- Town of Vernon Volunteer Fire Department
- Town of Ophir Volunteer Fire Department

9.9.8 **Other Emergency Services**

9.9.8.1 Coordination with other emergency services in Tooele, Utah and Salt Lake Counties along with federal emergency response groups is handled through the Chemical Stockpile Emergency Preparedness Plan (CSEPP), which is coordinated by DCD.

9.9.9 **Department of the Army (DA)**

9.9.9.1 Additional Department of the Army (DA) resources are available to respond to a chemical accident/incident at the DCD installation. These DA-level resources are deployed by DA Headquarters, based on information and requests made by the DCD Commander. DA resources available to support a CAIRA response are detailed in TOCDF CAIRA Plan. TOCDF, through DCD, has made contact with the local and regional entities and authorities, which may be involved, in an emergency situation at the facility.

9.10 **PROTECTIVE ACTIONS AND EVACUATION PLAN [R315-8-4.3(e)]**

9.10.1 **Protective Actions Overview**

9.10.1.1 Protective actions are emergency measures intended to avoid or reduce personnel exposure to hazards. The two primary protective actions are evacuation, which involves moving personnel away from a hazard, and in-place sheltering, which involves personnel remaining indoors to avoid a hazard. Evacuation is the preferred protective action when conditions allow it to be safely completed prior to personnel hazard exposure. In-place sheltering is the preferred protective action when conditions do not permit a safe evacuation. Other protective actions include access control and the use of protective equipment. Protective equipment, such as respirators, suits, gloves, boots, etc., is worn primarily by emergency response personnel. All site personnel have Army protective masks and Mark I nerve agent antidote kits within arm's reach.

9.10.1.2 Protective actions may be required for both on-post personnel and the off-post general public. The selection and implementation of protective actions for the public are the responsibility of civilian authorities and are addressed in the DCD CAIRA Plan.

9.10.1.3 Protective actions may be implemented for either an actual or a potential danger. An example of a protective action based on an actual threat is an evacuation of the site due to DCD reporting a release of agent from Area 10. When protective actions are implemented prior to an actual danger existing they are called precautionary. An

example of a precautionary protective action is evacuating the site due to a major leak in the propane gas tank south of the BRA PAS area. The leak itself would not necessarily pose a health danger to the site, but the potential for the tank to explode and cause significant damage to personnel and property would warrant a precautionary site evacuation.

9.10.1.4 Determination of the appropriate protective actions for an emergency event is made through the protective action decision-making process. The process involves an assessment of event conditions and available data, use of contingency plans based on the plant hazards assessment, and selection of the protective action which best protects personnel from hazard exposure and minimizes event impacts.

9.10.1.5 The initial protective actions for an emergency event will be issued as soon as possible upon completion of the event assessment and protective action decision-making process. Subsequent protective actions will be developed and implemented as needed when changes in event conditions warrant upgrading or downgrading the existing protective actions. Examples of situations, which could result in the issuance of subsequent protective actions, include a shift in wind direction, obtaining results from monitoring teams, and successful containment of the hazard.

9.10.2 **Protective Action Decision-Making**

9.10.2.1 Initial hazard assessment and protective action decision-making are performed in the Control Room. An upset condition is identified in the Control Room either by notification from site personnel or via alarms or abnormal system readings. Control Room personnel perform an initial assessment of event conditions to determine the appropriate immediate response actions. These actions may involve providing guidance to first responders on how to properly confine the hazard and establish perimeter control, and/or may be requests for support from organizations such as Medical, TEAD Fire Department, or the HAZMAT Team.

9.10.2.2 Following the determination of required immediate response actions, the IC will begin the protective action decision-making process. The process involves an analysis of the following event conditions and factors: Type of actual or potential hazard; Anticipated hazard duration; Time of hazard occurrence; Meteorological conditions; Projected or actual event impacts; and Projected or actual populations affected by hazard.

9.10.2.3 The selection of protective actions is based on the goal of reducing personnel exposure to the hazard and reducing overall event impacts. For many smaller events, no protective actions may be required. For events with a slightly larger potential for personnel danger, the donning of protective masks, such as would be appropriate in a Chemical Accident/Incident, may be ordered as a precautionary protective action. For events which pose a more serious and imminent danger to personnel, a determination must be made between in-place sheltering and evacuation.

9.10.2.4 The protective action of evacuation will be implemented primarily for events involving the sustained release or continued presence of chemical agent or other hazardous materials.

9.10.2.5 The protective action of in-place sheltering will be implemented primarily for the following situations:

9.10.2.5.1 Events involving a short hazard duration in which personnel could avoid hazard exposure by staying indoors until any released materials can pass through the area

9.10.2.5.2 Events where time or protective equipment is not available to avoid significant exposure to personnel

9.10.2.5.3 In lieu of evacuation when weather or other conditions do not permit a safe evacuation

9.10.2.6 Immediate protective actions may be implemented by personnel in the hazard area upon identification of an emergency event. Subsequent protective actions, however, are determined and issued by the IC. Since the IC position is filled by the Plant Shift Manager, who is always available on site, TOCDF has 24-hour protective action decision-making capability. In a Chemical Accident/Incident, the CAICO in the DCD (DCD EOC) will determine the appropriate protective actions for the entire installation, including TOCDF. The EOC also provides protective actions to TOCDF for post emergencies which affect TOCDF.

9.10.2.7 When protective actions have been determined and affected areas and populations defined, the information is relayed to the following groups by the method shown:

Group	Method of Contact
Site Personnel	Public Address System
On-Scene Responders	Public Address System, Telephone, & Radio
CAL	Telephone
Stark Road Offices	Telephone
DCD (via EOC)	Telephone

9.10.2.8 It is important that all affected personnel and groups immediately carry out protective actions.

9.10.2.9 DCD is responsible for providing protective action recommendations to off-post authorities. DCD bases their recommendations in part on information received from TOCDF. The TOCDF Control Room provides DCD's Emergency Operations Center with the identical information used to develop the site protective actions. Final determination of off-post protective actions is the responsibility of off-post elected officials.

9.10.2.10 The IC periodically assesses event conditions and evaluates the appropriateness of existing protective actions (in coordination with the CAICO in Chemical Accident/Incidents). Only the IC (CAICO in Chemical Accident/Incidents) has the authority to upgrade or downgrade protective actions as appropriate.

9.10.3 **Protective Action Implementation**

9.10.3.1 Protective Masks and Agent Antidotes

9.10.3.1.1 All TOCDF site personnel are issued military protective masks. Included in the issuing process is performance of a fit test and training on mask use and upkeep. The masks are examined semi-annually at a minimum by the issuing branch, and each individual is responsible for performing a visual inspection of their mask monthly.

9.10.3.1.2 The protective masks are designed to prevent inhalation of chemical agent vapors by personnel. The masks are not designed or intended to be used to limit exposure to any substances other than chemical agent. If the IC determines that the donning of protective masks is an appropriate protective action, affected personnel will be notified via the methods discussed in Section 9.10.2 of this Contingency Plan.

9.10.3.1.3 All site personnel have been issued three Mark I nerve agent antidote kits. Each kit contains two injectors: Atropine (2 mg) and Pralidoxime Chloride (600 mg). The injectors will be used whenever two or more signs or symptoms of mild/moderate nerve agent exposure are being exhibited or whenever one or more signs or symptoms of severe nerve agent exposure are being exhibited. The injectors will be applied to either the outer thigh muscle or the upper outer quarter of the buttocks. Site personnel have been trained in identifying agent exposure symptoms and in the use of antidote injectors when they are issued the Mark I kits.

9.10.3.2 Access and Traffic Control

9.10.3.2.1 Access control will be established to prevent access to the site or specific site buildings and areas. Depending on the severity and scope of the emergency event, access may be controlled at the DCD installation main gate, TOCDF Entry Control Facility (ECF), Control Room, and Clinic, in addition to the hazard-affected buildings and areas. Access control at the main gate and the ECF will be performed by DCD security personnel. Additional access control capability exists by closing the site gates, which are at the northeast and south sides of the site. Traffic control is intended to facilitate the smooth flow of vehicles during an evacuation.

9.10.3.3 In-Place Sheltering

9.10.3.3.1 In-place sheltering involves personnel remaining indoors to avoid exposure to the hazard outside. Most buildings can provide significant protection against industrial chemical plumes, particularly in releases of short duration. Most non-pressurized buildings, however, are not air-tight. After a period of approximately two to three hours, the inside hazardous concentration becomes equal to the outside concentration, and the structure no longer provides exposure protection. In-place sheltering, therefore, is only effective as a short-term measure.

9.10.3.3.2 In the event in-place sheltering is ordered, personnel will complete the following actions to ensure the maximum possible exposure protection:

- Close windows and doors

- Shut off ventilation systems which draw air from the outside

Note: In buildings with agent-filtered ventilation systems (i.e. DSA, MDB, Control Room, Clinic, and TCB), the ventilation system will not be shut off.

- Move away from windows and doors (as appropriate)

- Move away from exterior walls facing the hazard (as appropriate)

9.10.3.3.3 Individuals outdoors will be permitted to enter a building where personnel are sheltering, but the time that doors are open must be minimized. Personnel will be prevented from exiting the shelter, by verbal instruction, until the sheltering protective action is canceled or changed.

9.10.3.3.4 Personnel accountability will be performed during in-place sheltering. The designated Point of Contact (POC) for each work group will use their respective Emergency Evacuation Personnel List to perform an accountability of their personnel, then report the results to the Accountability Coordinator.

9.10.3.4 Evacuation

9.10.3.4.1 Evacuation involves the moving of personnel away from a hazard and to a safe area. An evacuation protective action may be declared for the entire TOCDF or a portion of the TOCDF, depending on the event severity and magnitude. A TOCDF-wide evacuation involves all non-essential personnel leaving the site to a safe location a significant distance away from the plant.[23] Essential personnel may be evacuated at a later time as conditions permit. A partial evacuation involves the movement of personnel from a specific plant or building to a safe area on the TOCDF site or near the TOCDF. The Incident Commander (IC) determines which buildings, areas, and populations are affected by an evacuation.

9.10.3.4.2 If a partial evacuation is determined as the appropriate action, all TOCDF personnel will be notified by the Control Room. Personnel in the affected area will be instructed to evacuate to a specified upwind location. All other TOCDF personnel will be told to stay clear of the affected area. The Control Room announcement also requests that any personnel who normally work in the evacuated area but who are presently at other site locations report their whereabouts to the Control Room.

9.10.3.4.3 Figures 9-10-1 through 9-10-29 show escape plans, which are posted in each TOCDF building as applicable. These figures show the best routes out of that specific building. All site personnel have received training on evacuation procedures.

9.10.3.4.4 Sweeps of evacuated buildings will be performed to ensure that all personnel have left, and Points of Contact (POCs) will perform personnel accountability. Based on sweep

[23] "Non-essential" personnel are those not required to stay during an emergency and perform critical plant operations or response activities. Persons who must stay and perform task even though the site is evacuating are termed "essential" personnel.

and accountability results, the IC will dispatch search and rescue teams as appropriate. The IC will determine when it is safe to return to the evacuated building or area.

9.10.3.4.5 If it is determined that a site-wide evacuation is appropriate, all TOCDF will be notified by the Control Room. All non-essential personnel will be told to report to the designated TOCDF muster area. The evacuation muster sites are indicated on Drawing EG-16-C-0004. There are three designated TOCDF muster areas:

- immediately south of the PSB
- immediately north of warehouse S-7
- Immediately north of the TOCDF/Area 10 boundary (activated by CAICO)

9.10.3.4.6 Signs are posted at the TOCDF muster areas to help personnel assemble with their co-workers. The Accountability Coordinator reports to the muster area to manage muster operations. Visitors to the TOCDF will follow the directions of their escort. Escorts will take visitors to the appropriate muster area, where they will turn over custody of the visitor to the POC for visitors.

9.10.3.4.7 Upon completion of muster area operations, the Accountability Coordinator, in coordination IC, will instruct personnel to either evacuate the TOCDF or return to their normal work locations. If transportation resources are required to support further evacuation, the IC will request resources from DCD.

9.10.3.4.8 In some cases, Privately Owned Vehicles (POVs) will be used for evacuation. When evacuating in POVs, personnel will follow one of the DCD-designated routes used for evacuation from TOCDF. Figure 9-10-30 is a DCD site map depicting the possible evacuation routes from the TOCDF.

9.10.3.4.9 The Control Room and Clinic are intended to be occupied by response personnel during most emergencies, even when the rest of the TOCDF is evacuated. Self-contained ventilation systems, filtered air systems, and positive pressure are among the engineered features of these buildings, which allow them to provide exposure protection to occupants. These buildings are locked during emergency events to control access.

9.11 REQUIRED REPORTS [R315-8-4.7(i) and (j)]

9.11.1 Required reports are made in accordance with R315-8-4.7(i) & (j) and TOCDF Part B Permit Conditions.

9.11.2 The operator must note in the operating record the time, date, and details of any incident that requires implementing the Contingency Plan. This form is completed in accordance with Section 9.7.1.4. For any emergency event requiring HAZMAT release reporting, the control room will notify the DCD EOC and the PMCD Shift Engineer and provide a copy of the event report. All reporting to the Army, local, State, and Federal agencies will be handled by DCD.

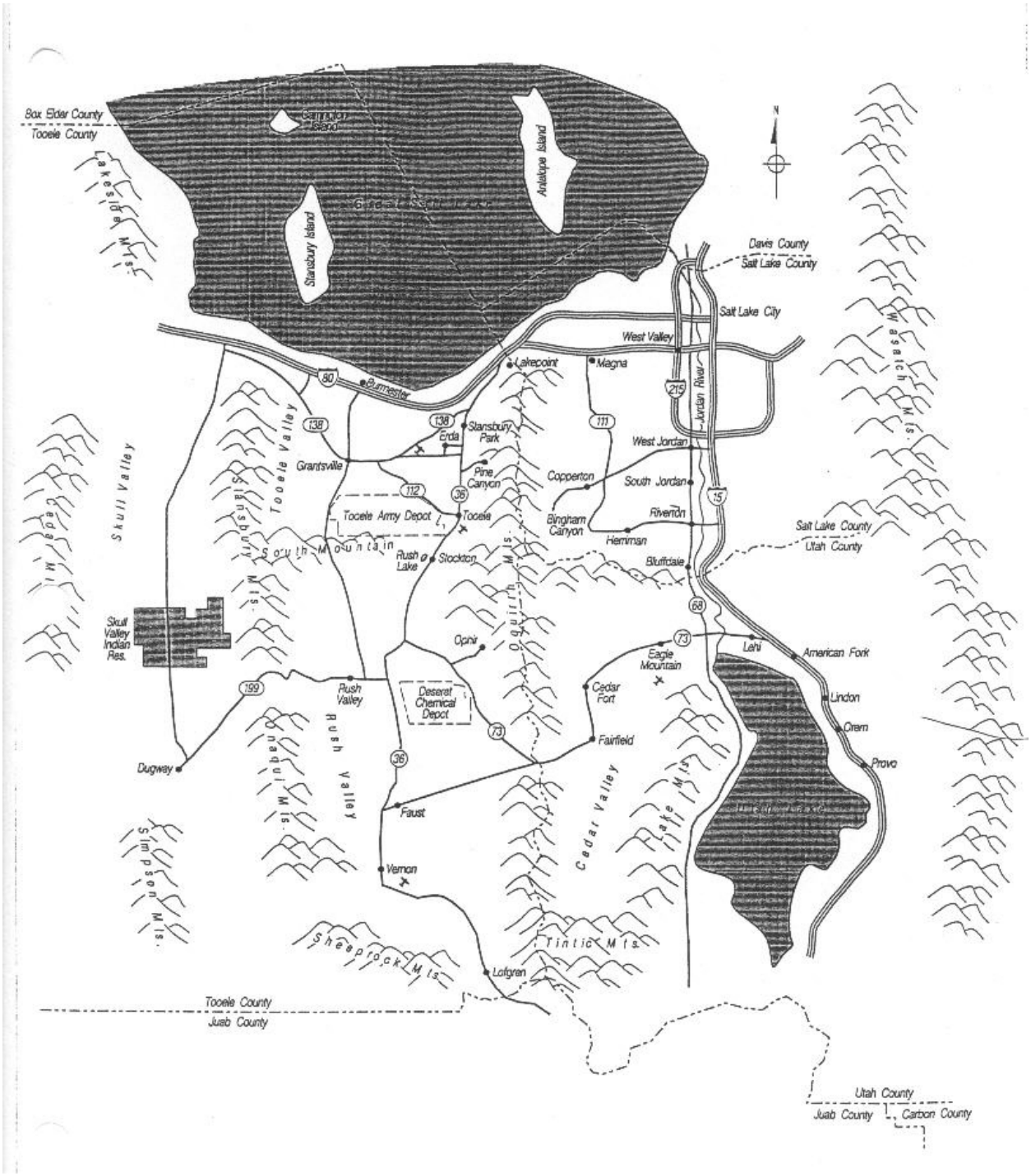


Figure 9-1-1
Location of Deseret Chemical Depot

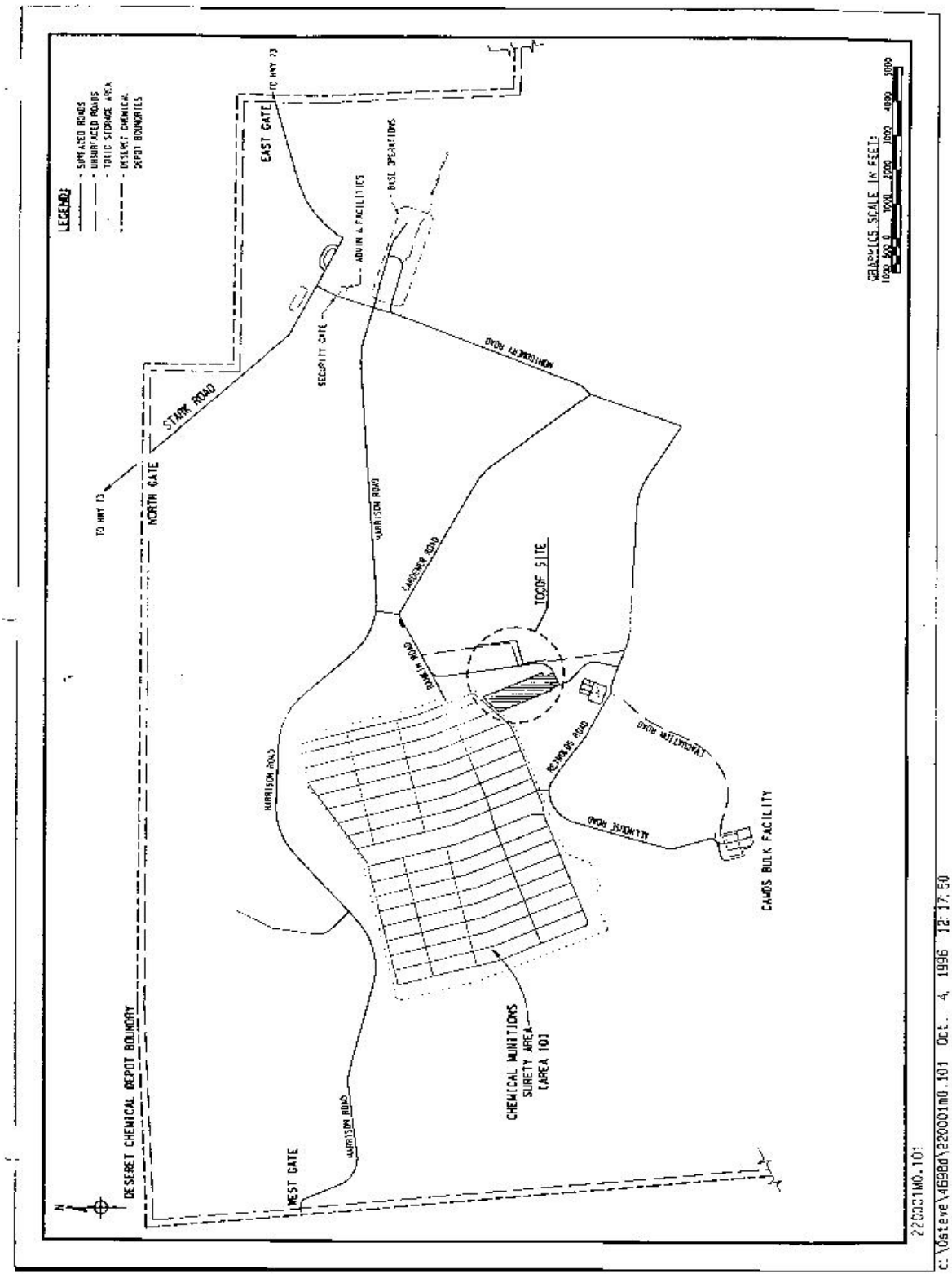


Figure 9-1-2
TOCDF – Location of Tooele Chemical Agent Disposal Facility

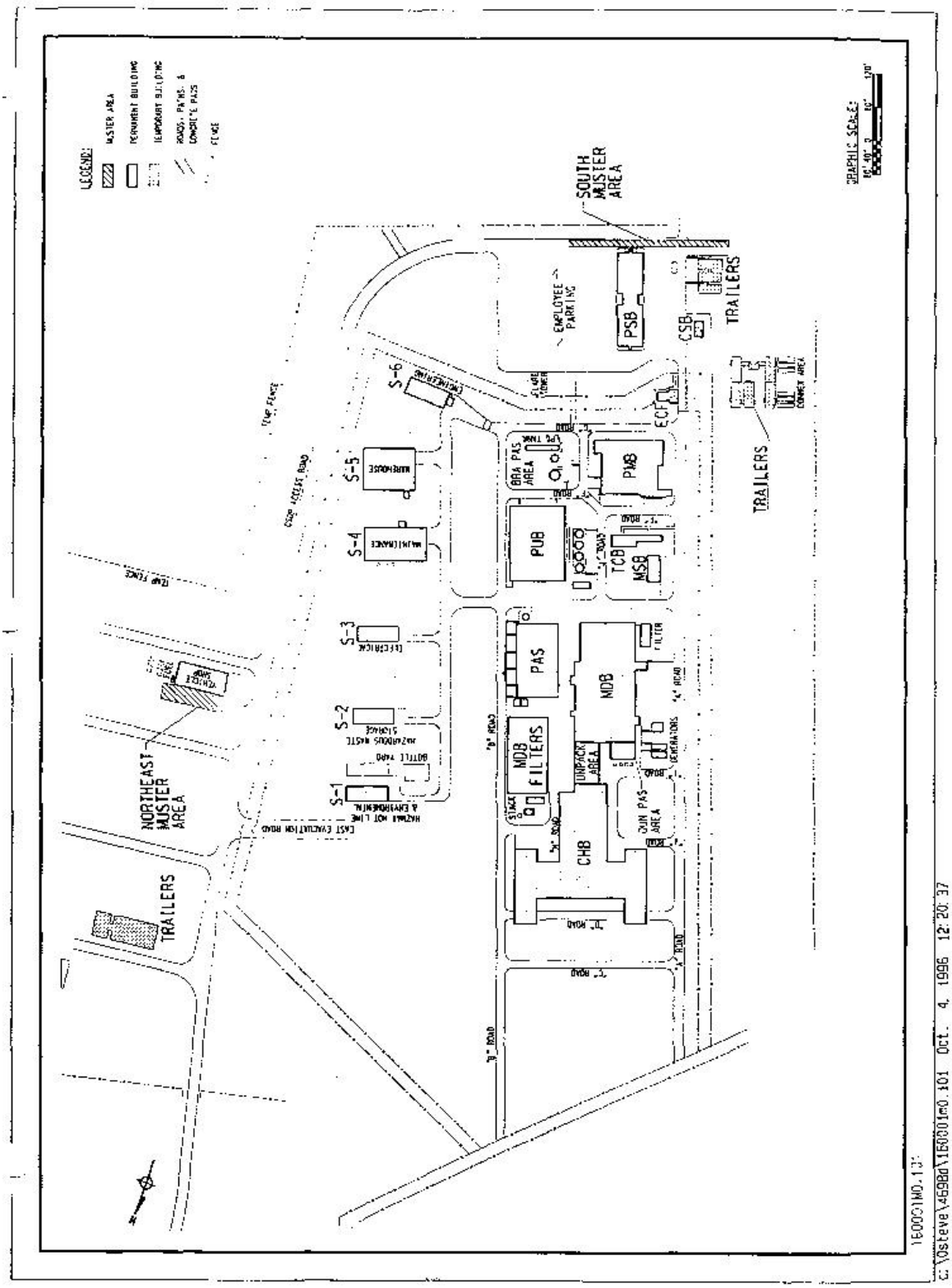


Figure 9-1-3
TOCDF – Tooele Chemical Agent Disposal Facility

Figure 9-4-1
MDB 1st Floor Air Ventilation Categories

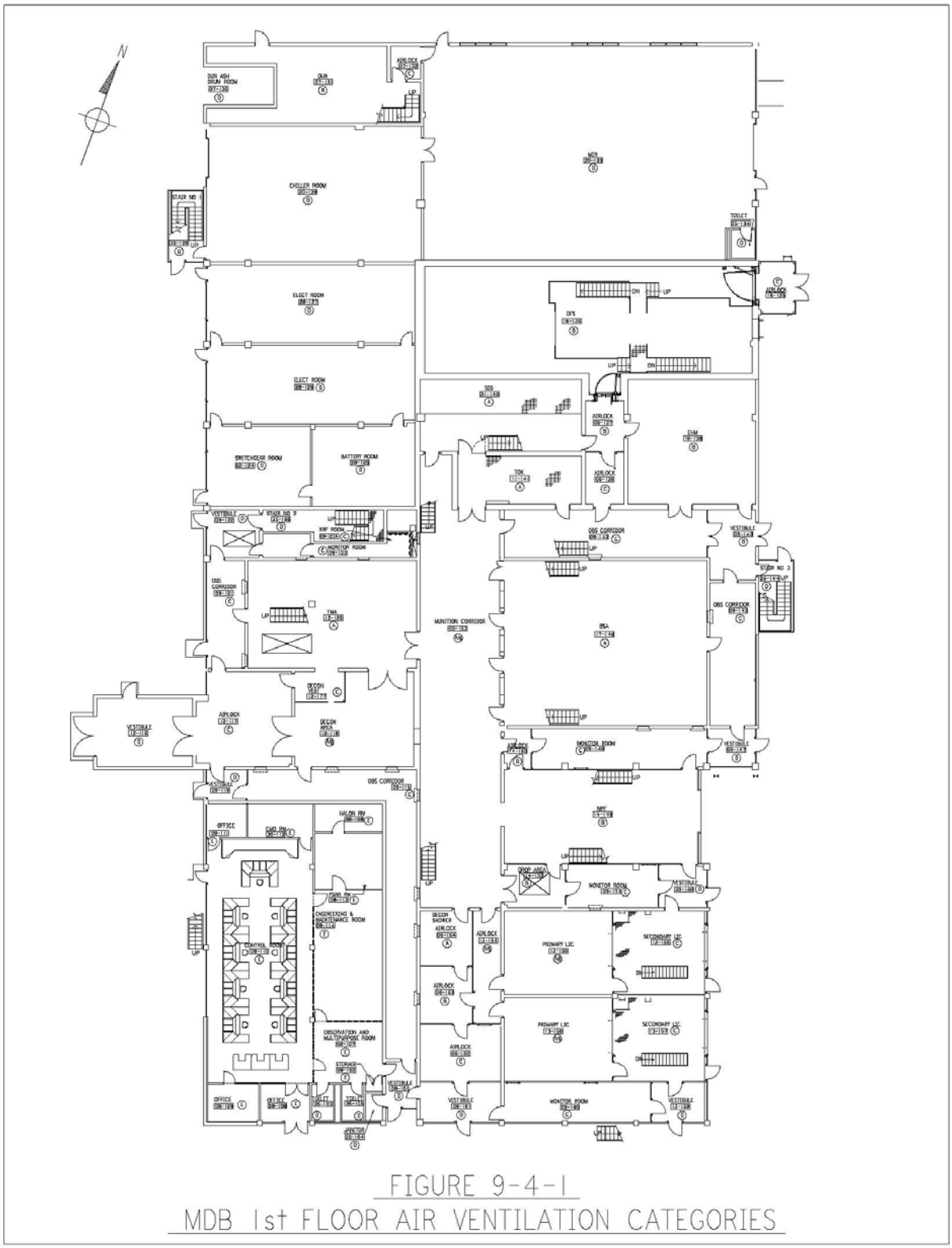


Figure 9-4-2
MDB 2nd Floor Air Ventilation Categories

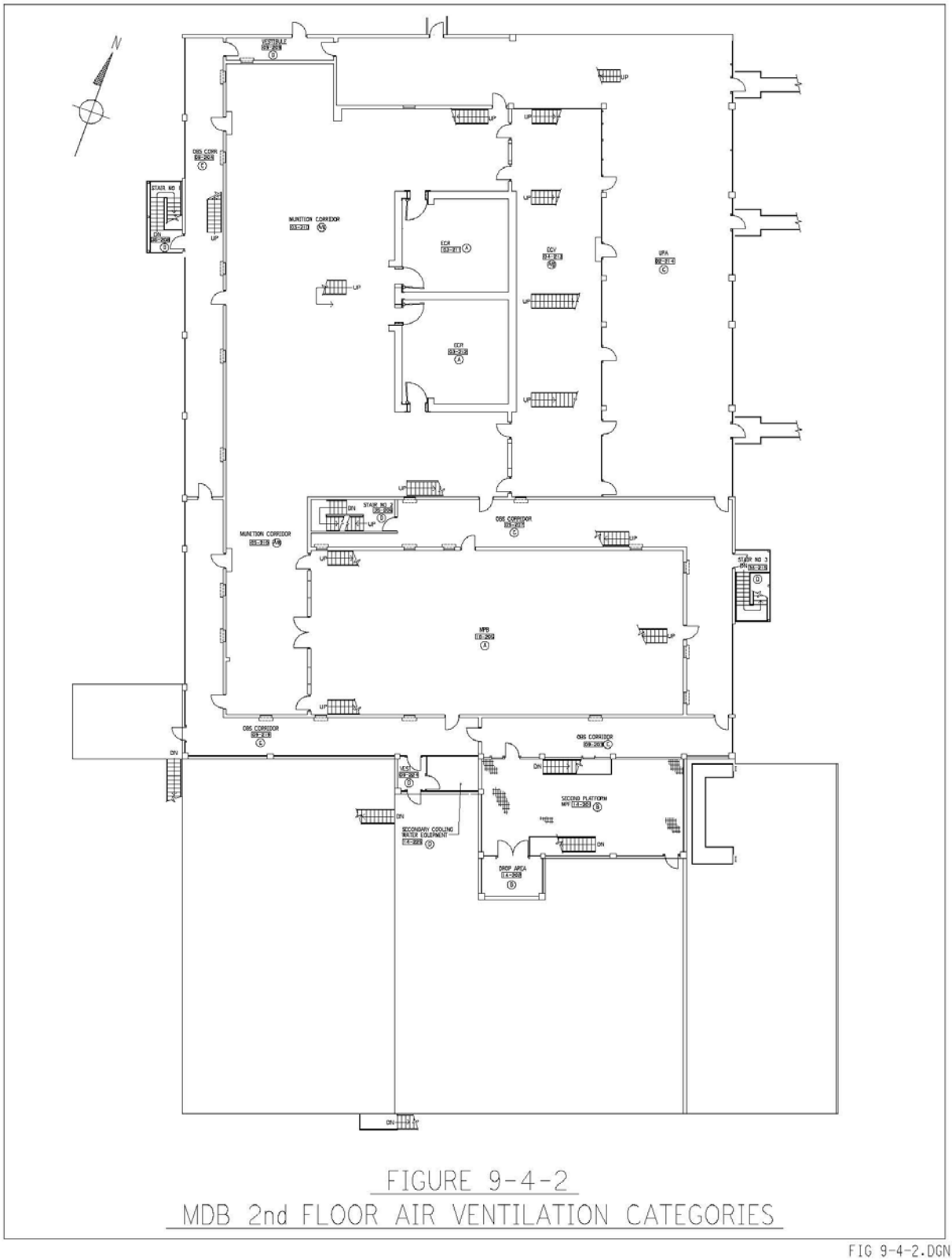


Figure 9-4-3
MDB 1st Floor Platform Air Ventilation Categories

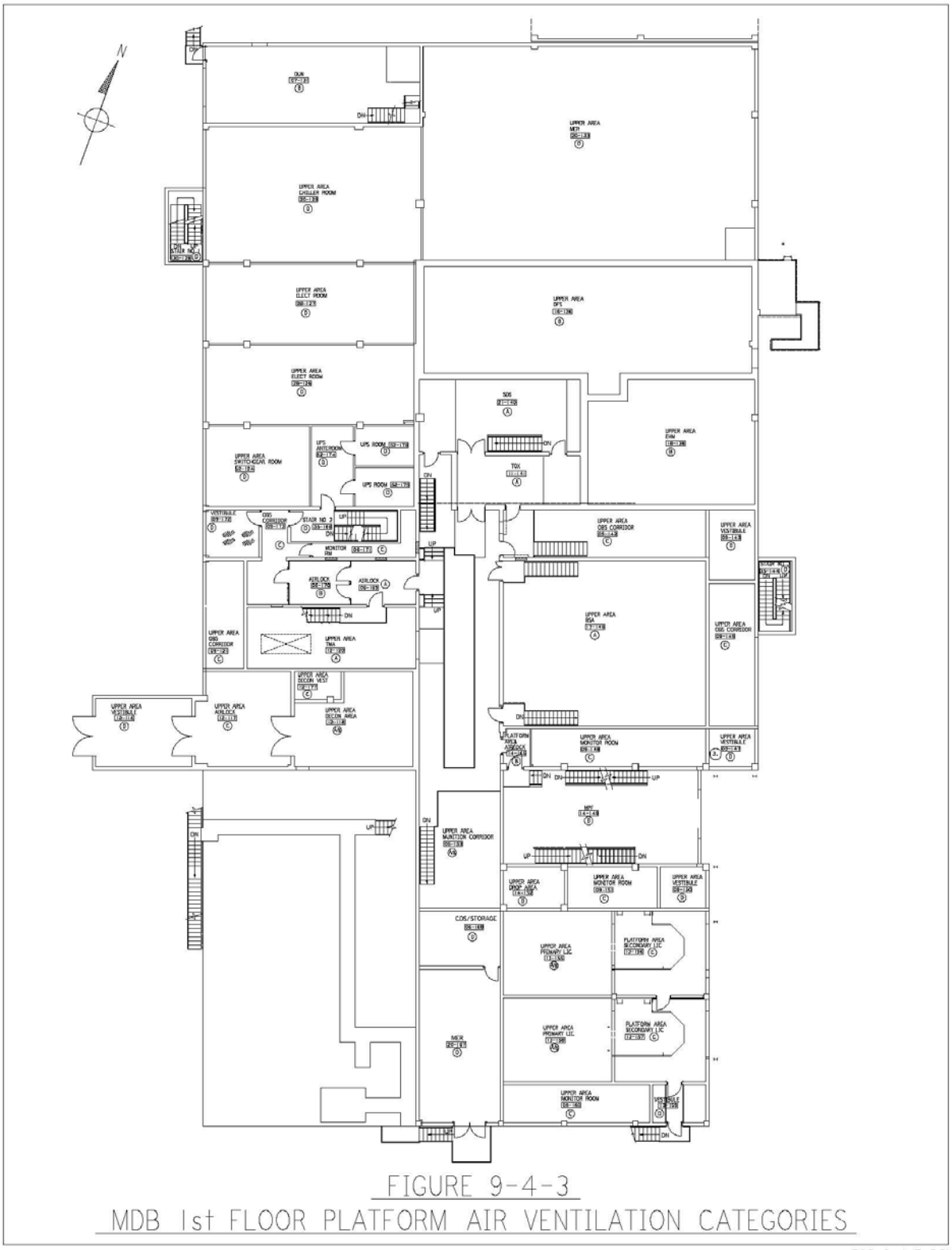
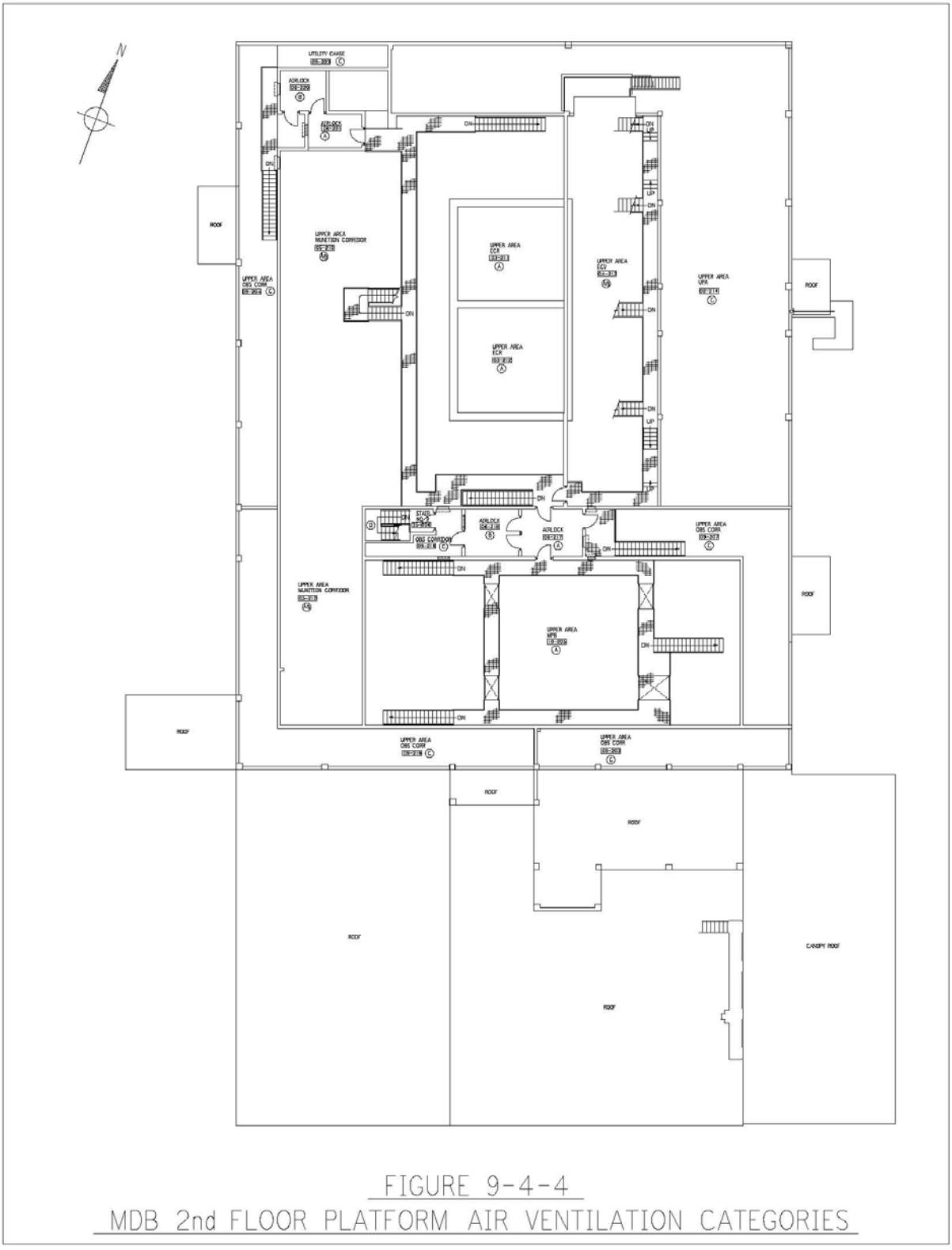


Figure 9-4-4
MDB 2nd Floor Platform Air Ventilation Categories



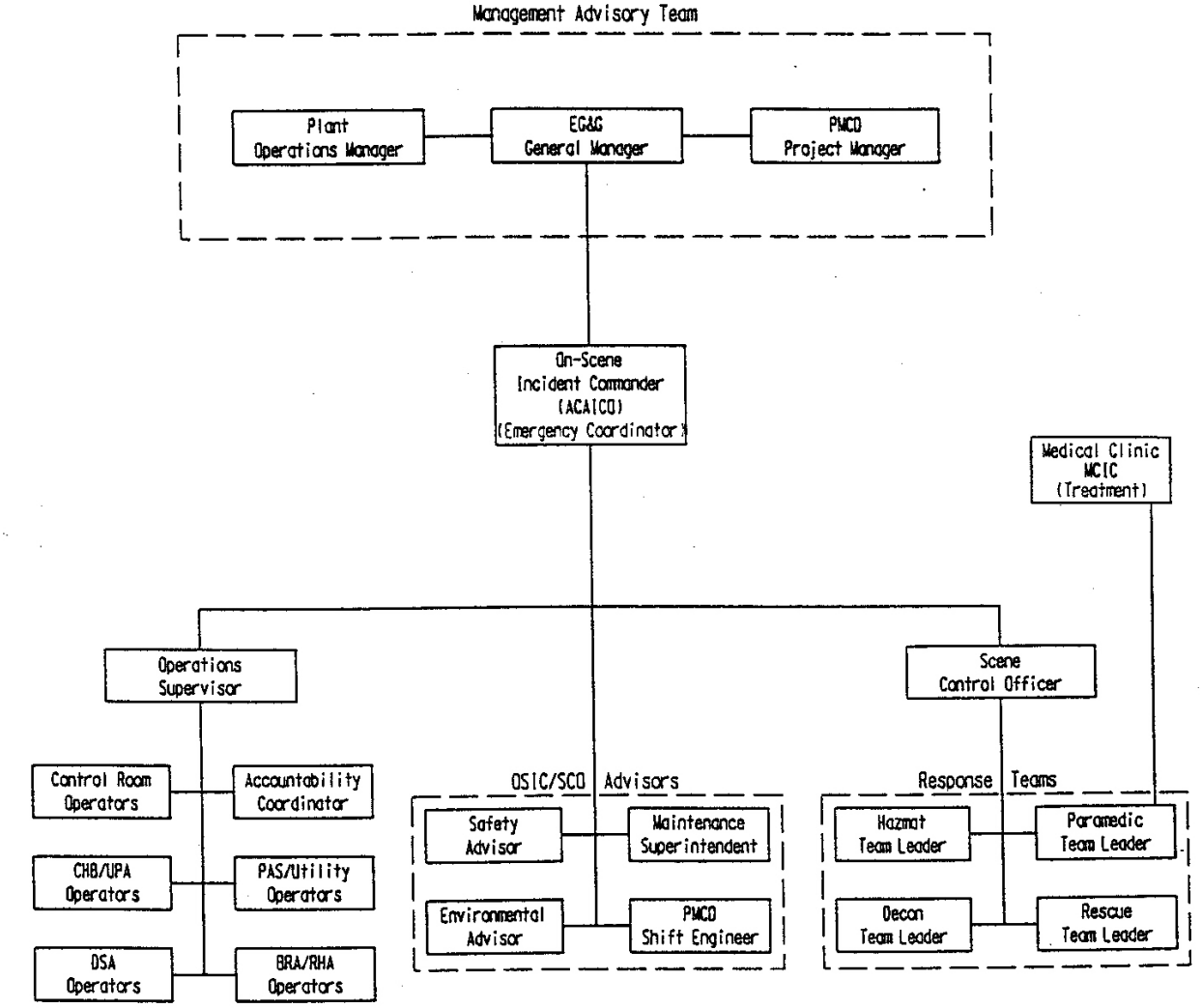


Figure 9-5-1
TOCDF Emergency Response Organization

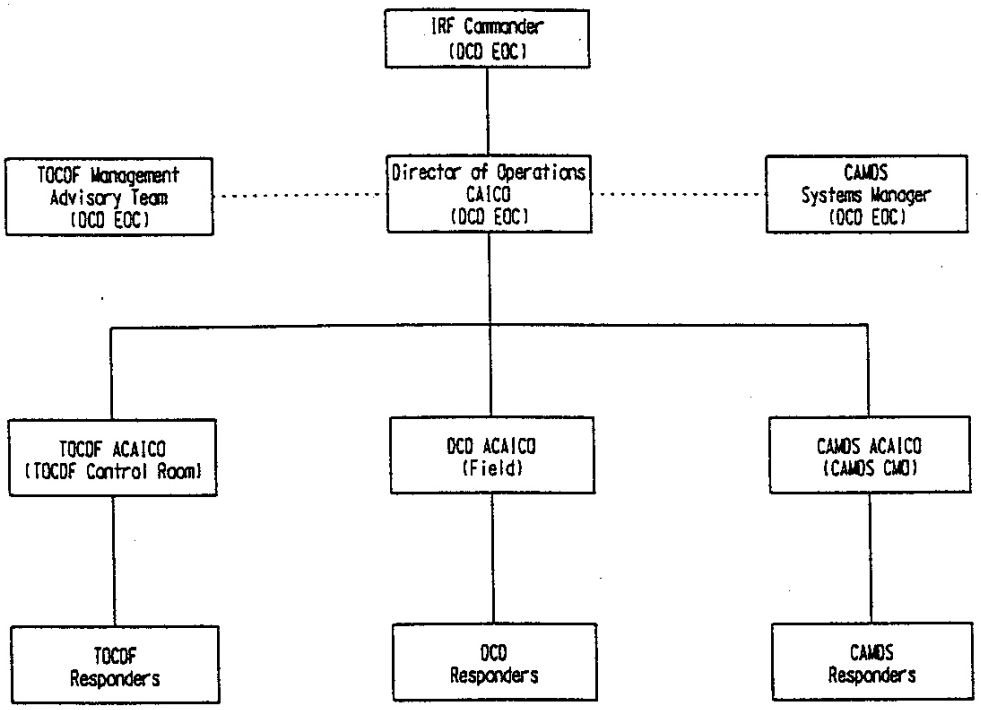


Figure 9-5-2
DCD Emergency Response Organization (Chemical Event)

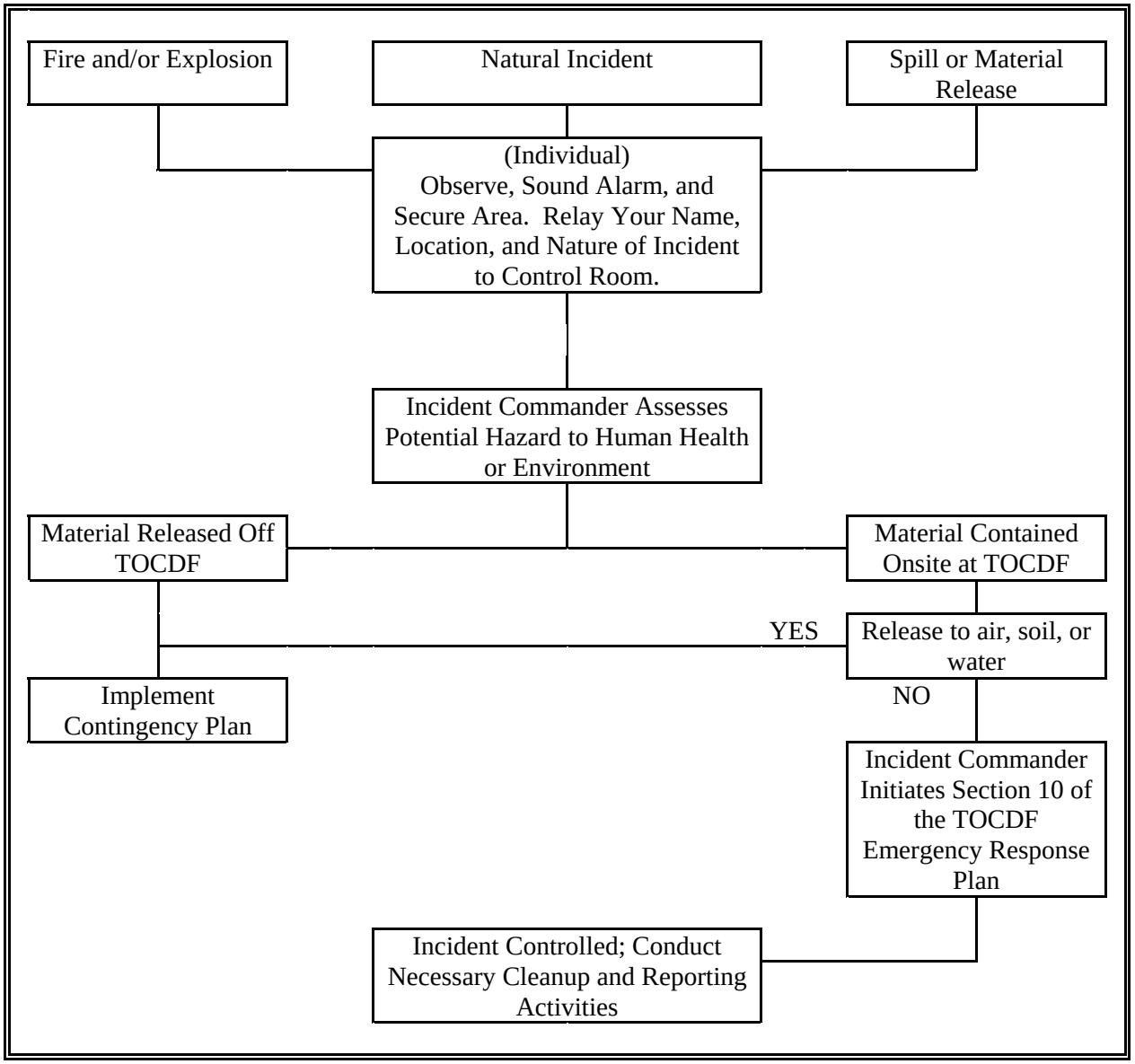


Figure 9-6-1
Initial Response Activities

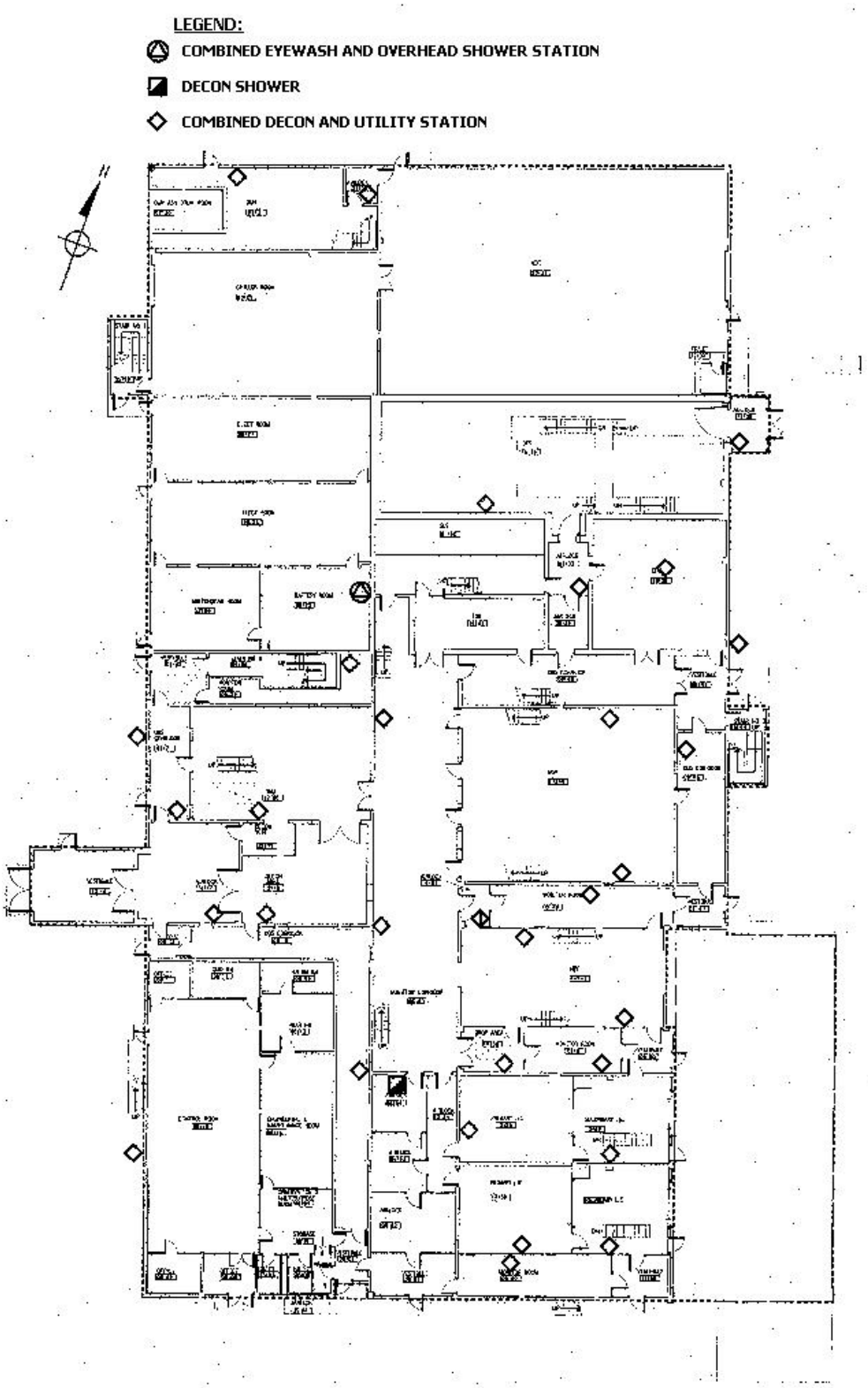


Figure 9-8-1
MDB 1st Floor Eye Wash & Decon Stations

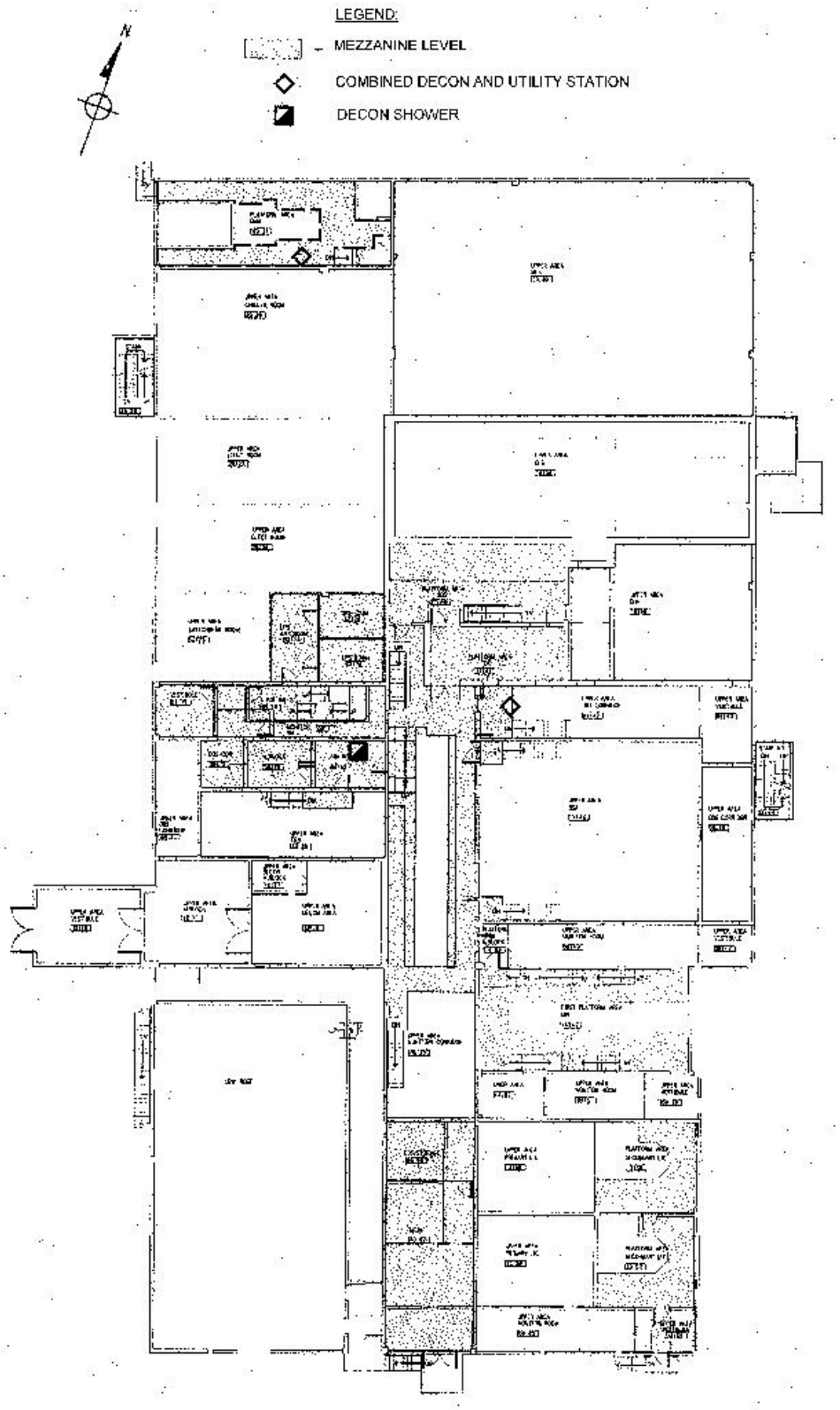


Figure 9-8-2
MDB 1st Floor Mezzanines Eye Wash & Decon Stations

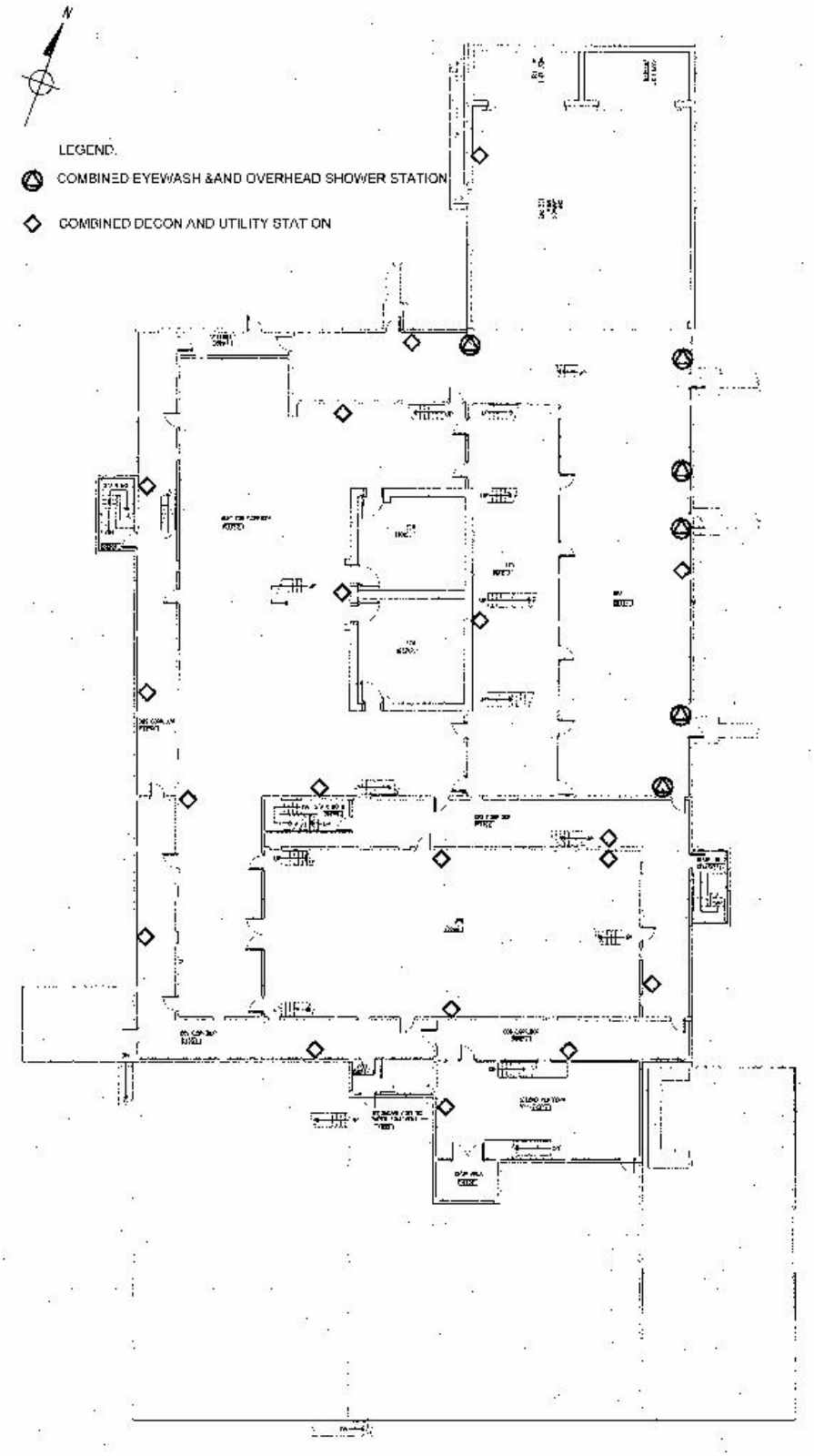


Figure 9-8-3
MDB 2nd Floor Eye Wash & Decon Stations

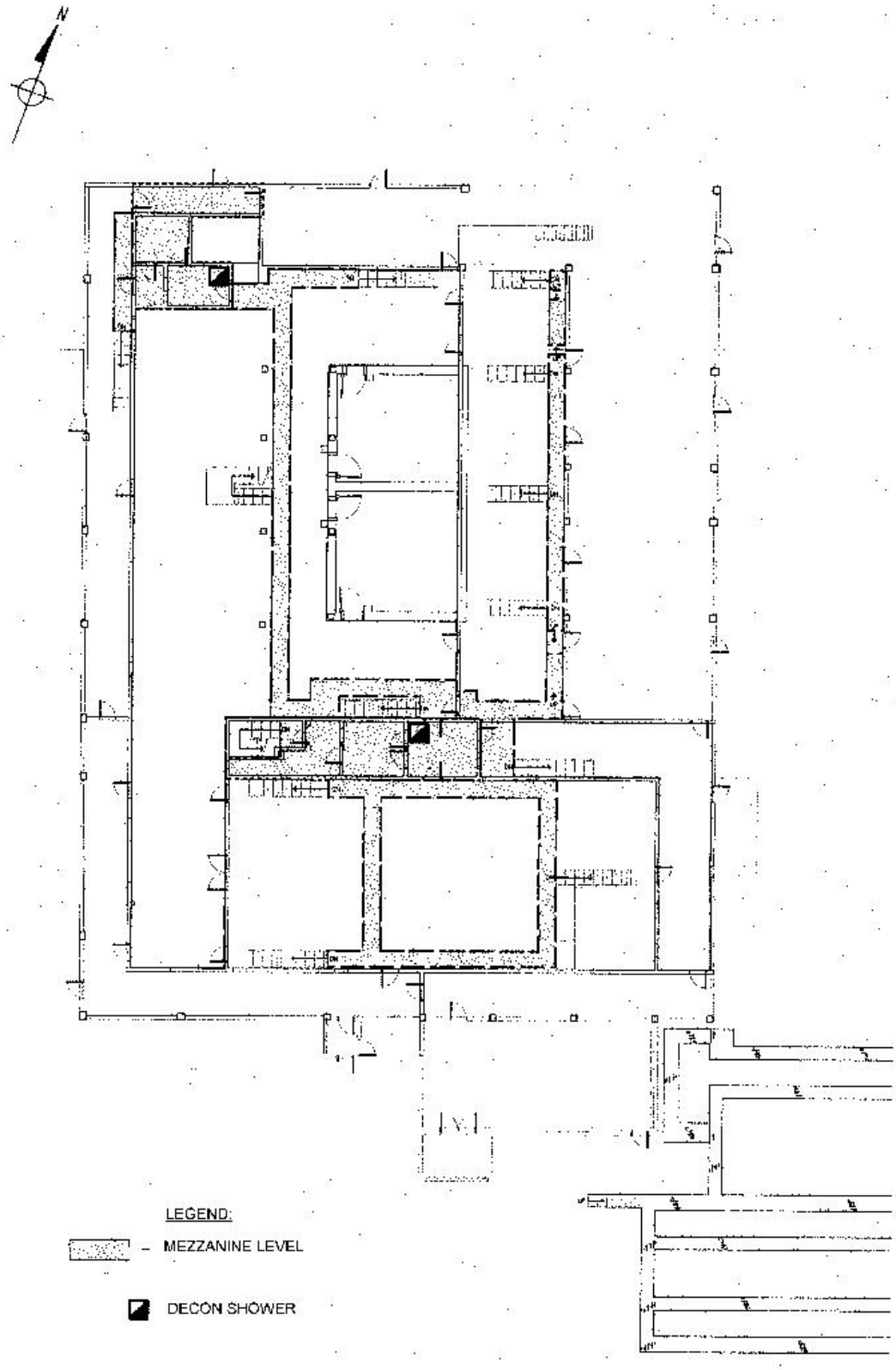


Figure 9-8-4
MDB 2nd Floor Mezzanines Eye Wash and Decon Stations

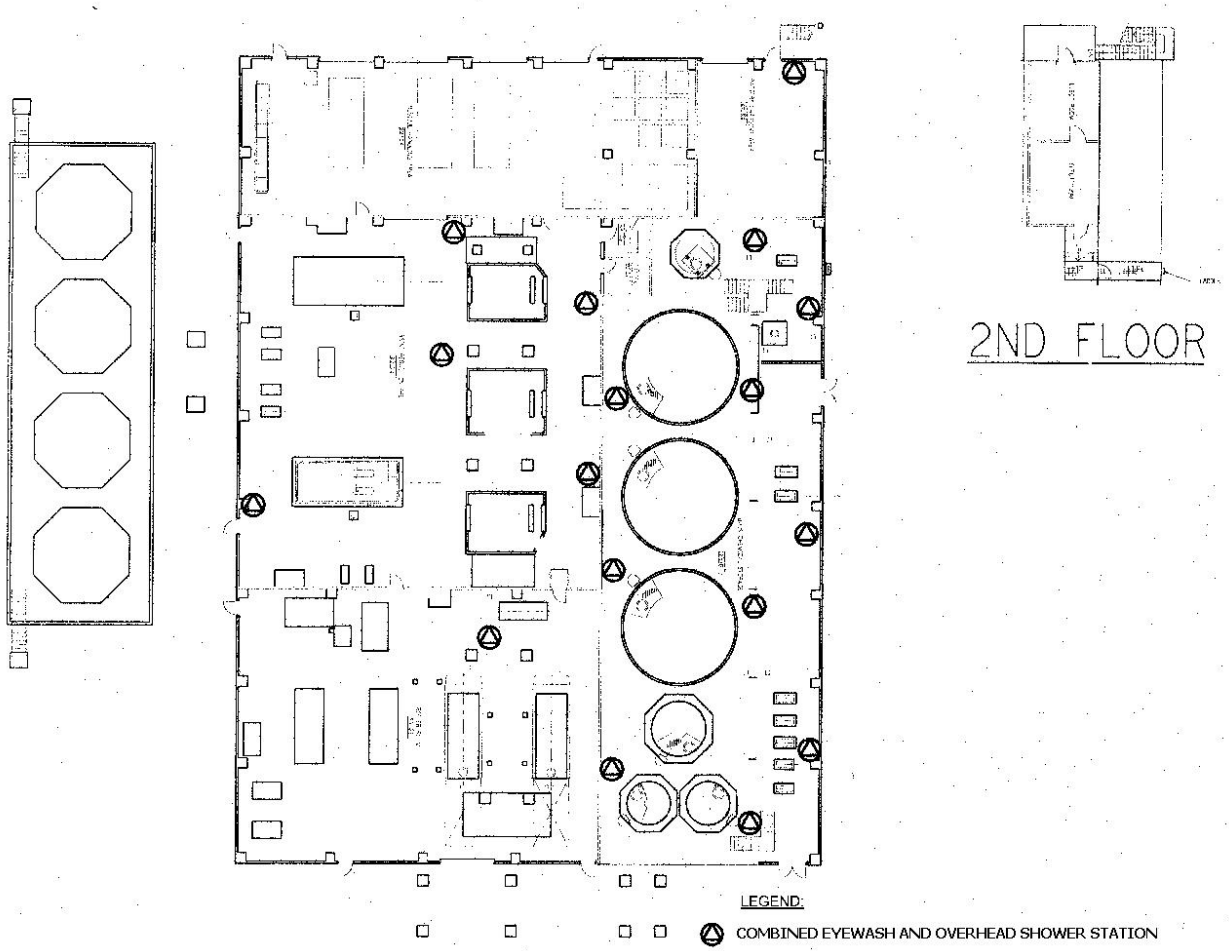


Figure 9-8-5
PUB 1st Floor Eye Wash Stations

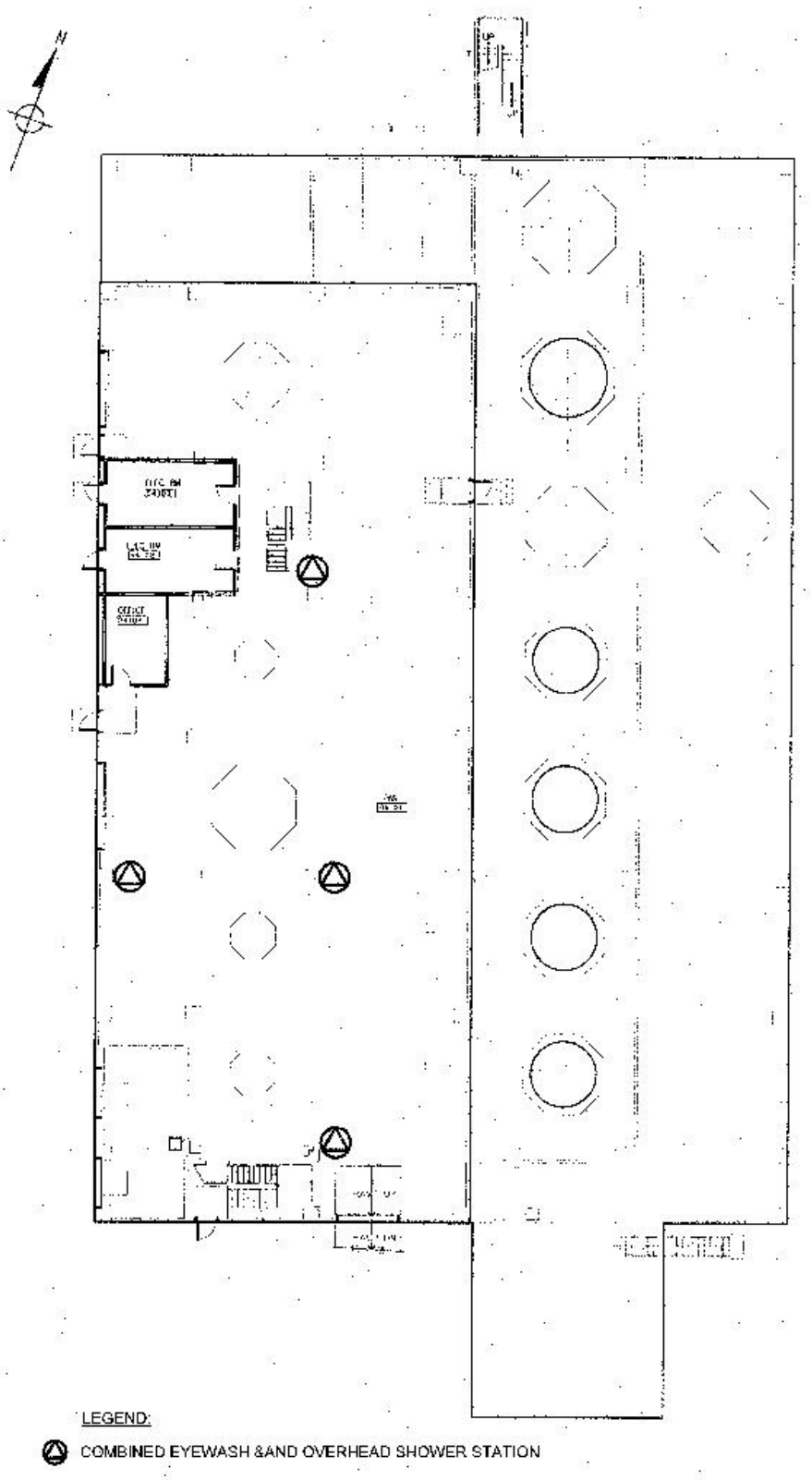


Figure 9-8-6
PAS 100 FT Level (Ground Floor) Eye Wash Stations

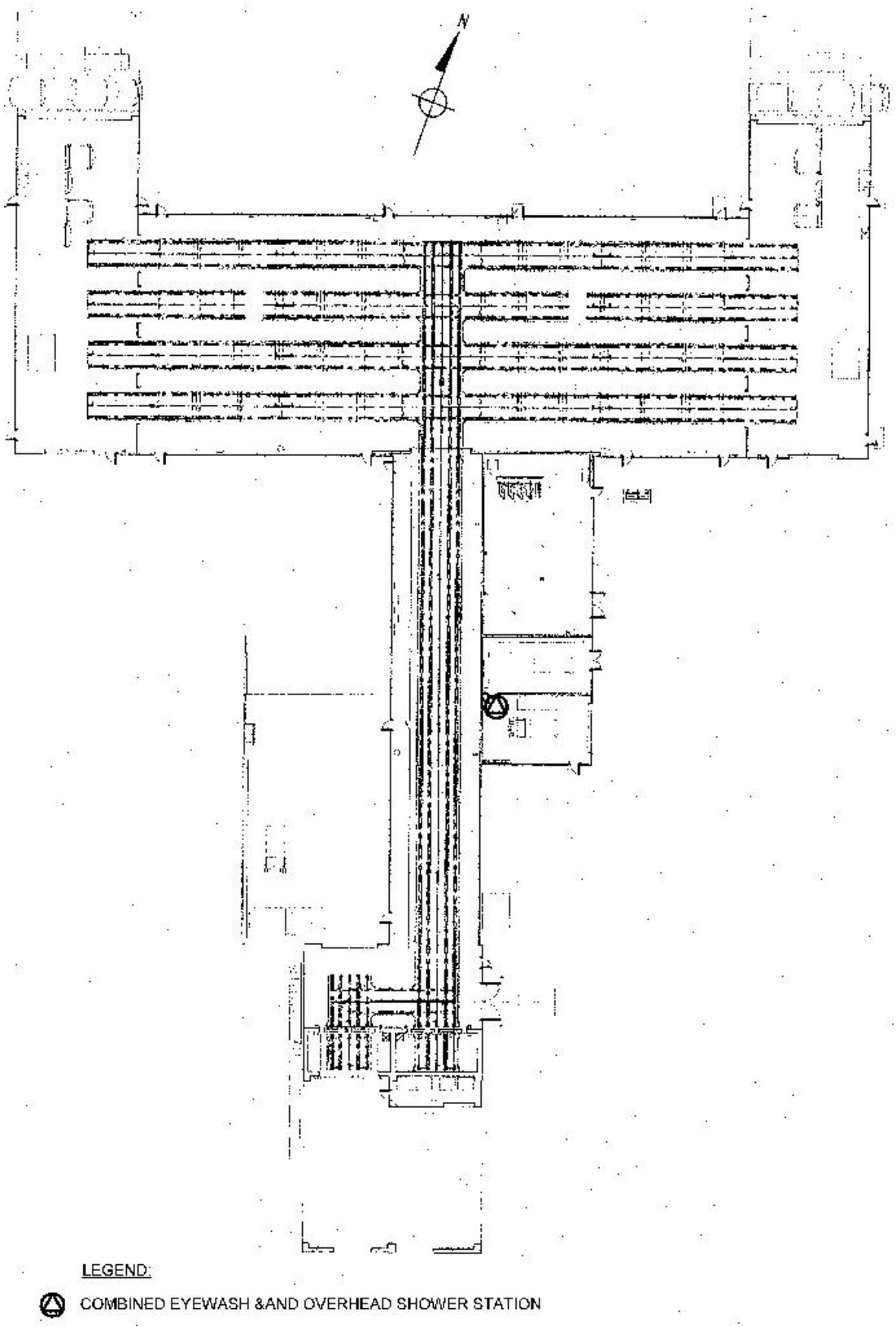


Figure 9-8-7
CHB 1st Floor Eye Wash Stations

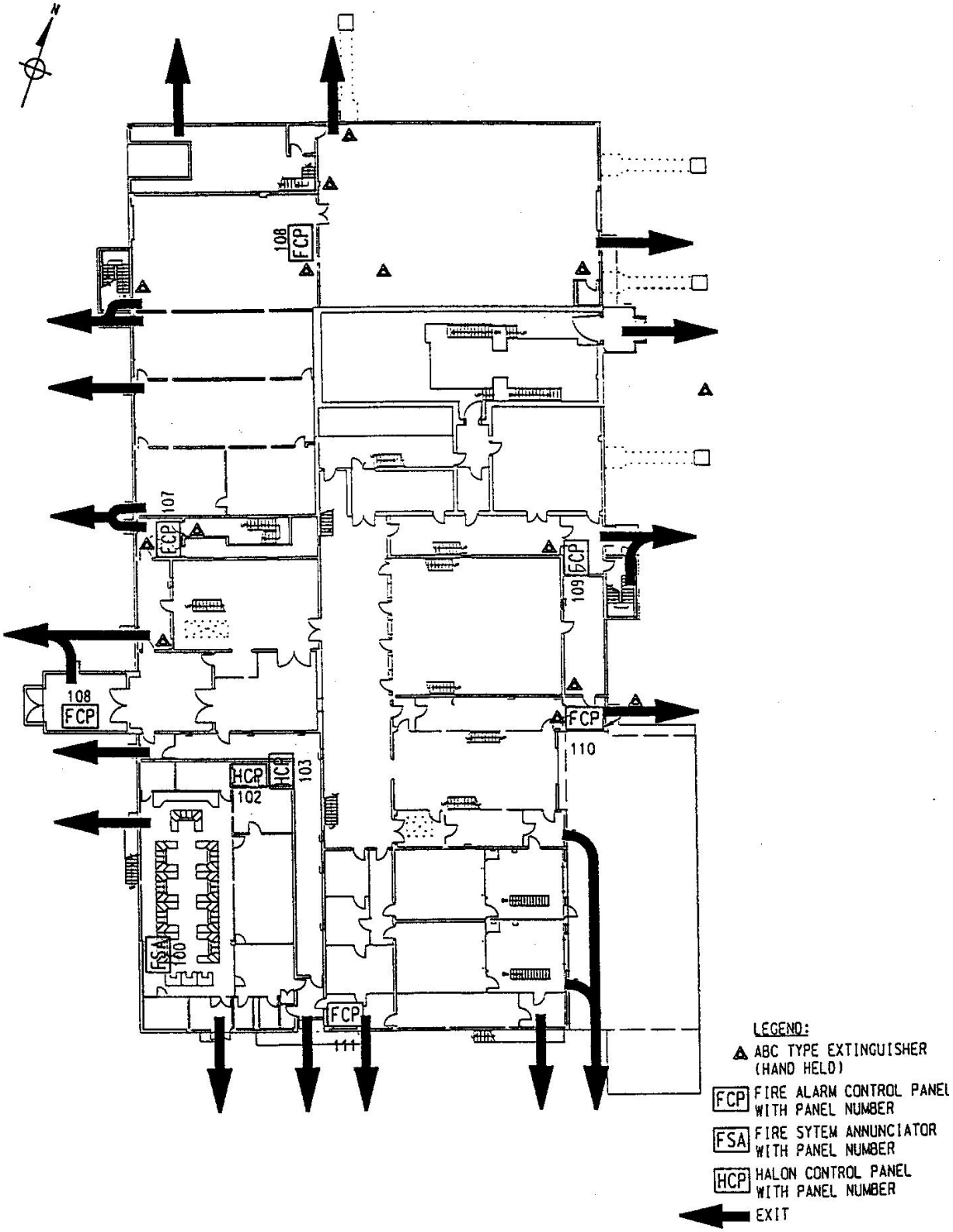


Figure 9-10-1
MDB 1st Floor

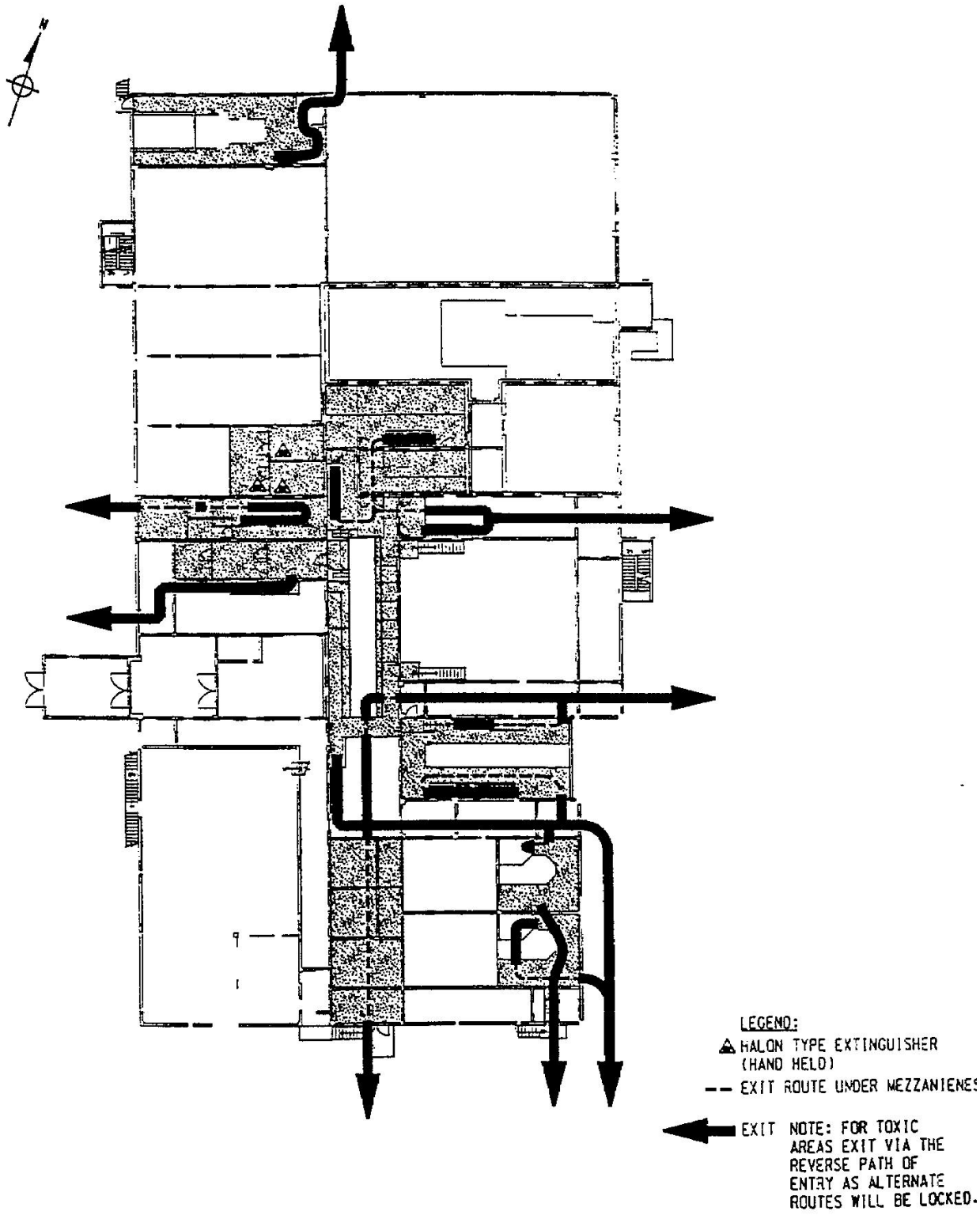


Figure 9-10-2
MDB 1st Floor Mezzanines

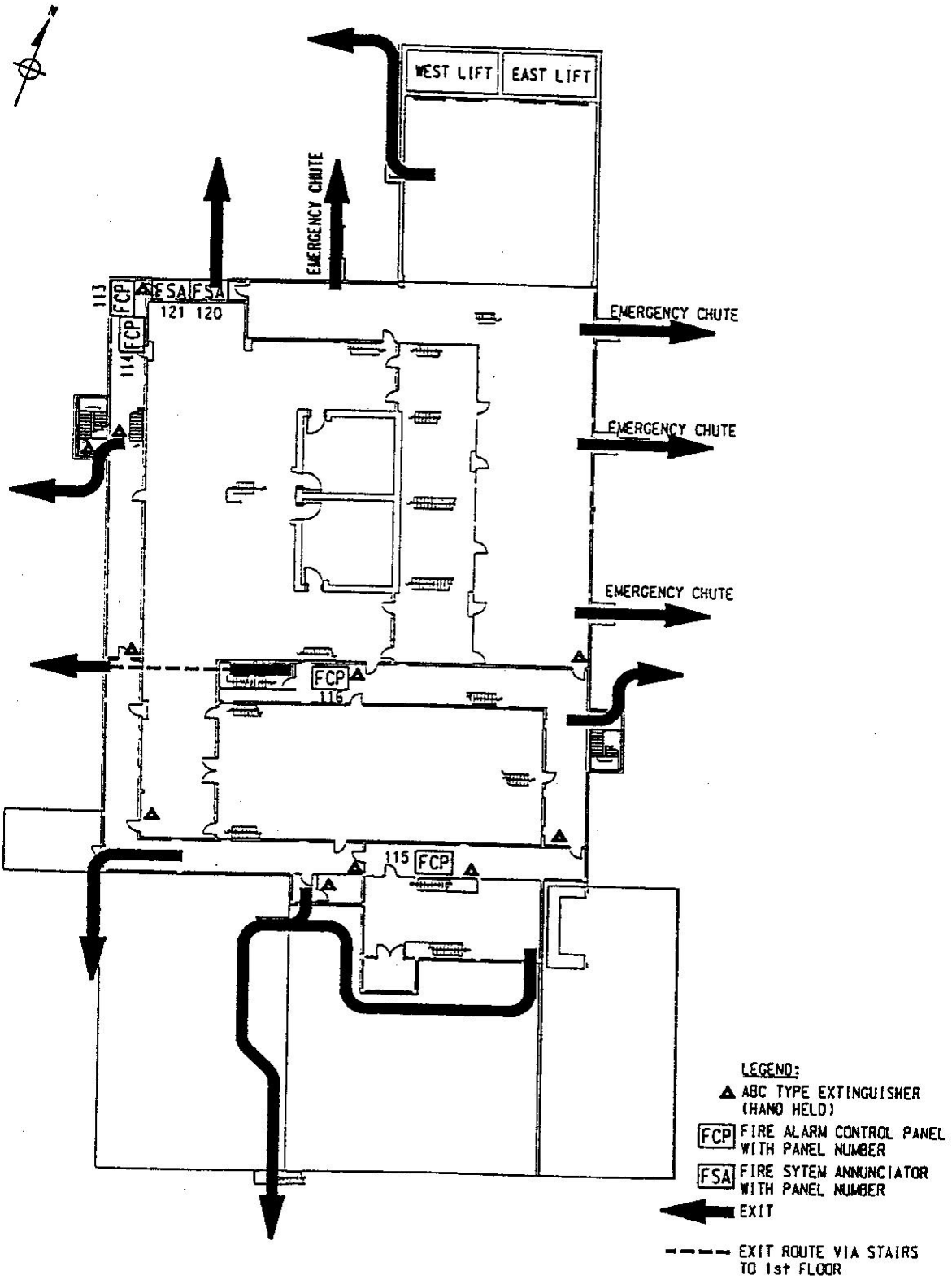


Figure 9-10-3
MDB 2nd Floor

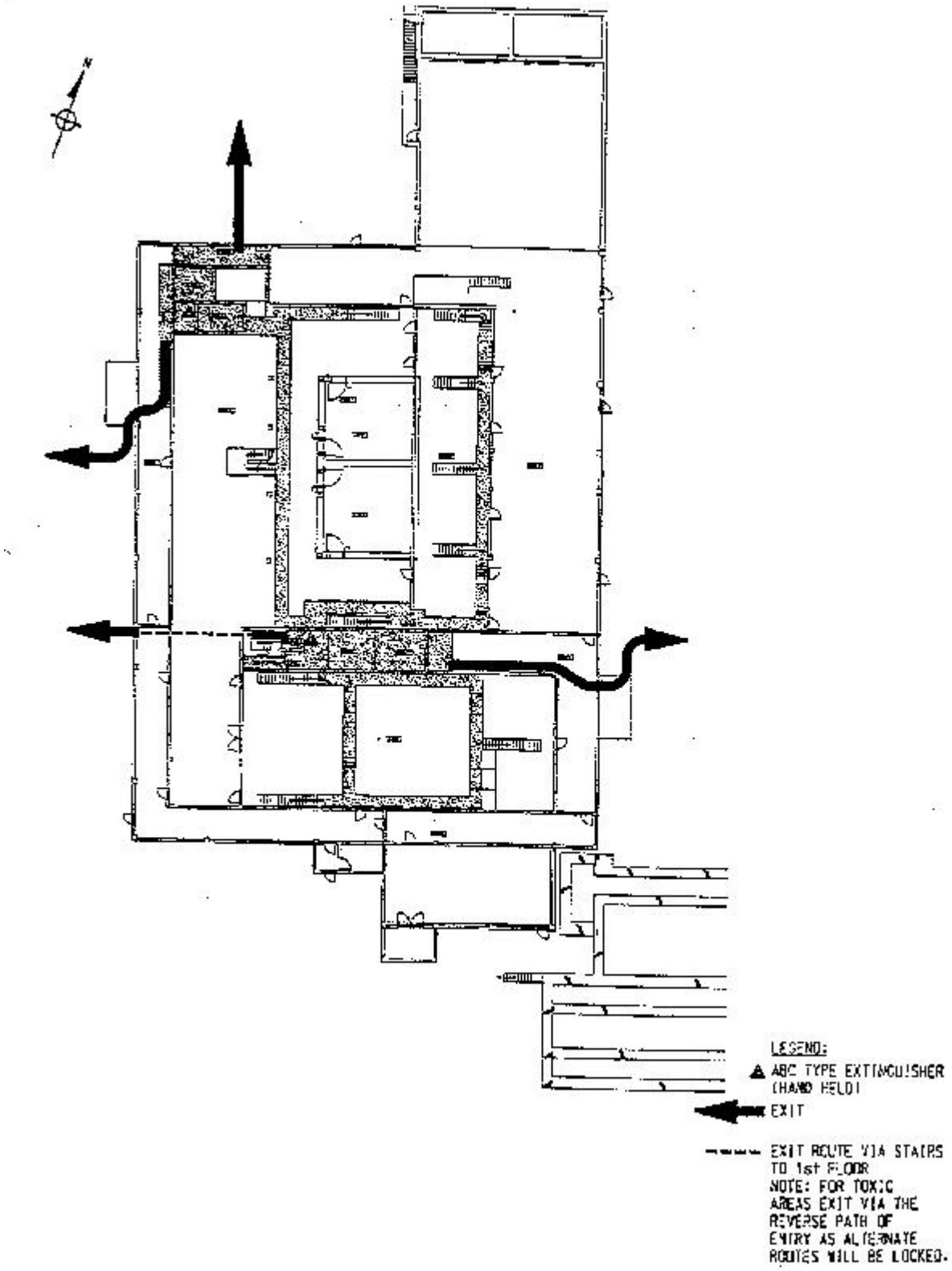


Figure 9-10-4
MDB 2nd Floor Mezzanines

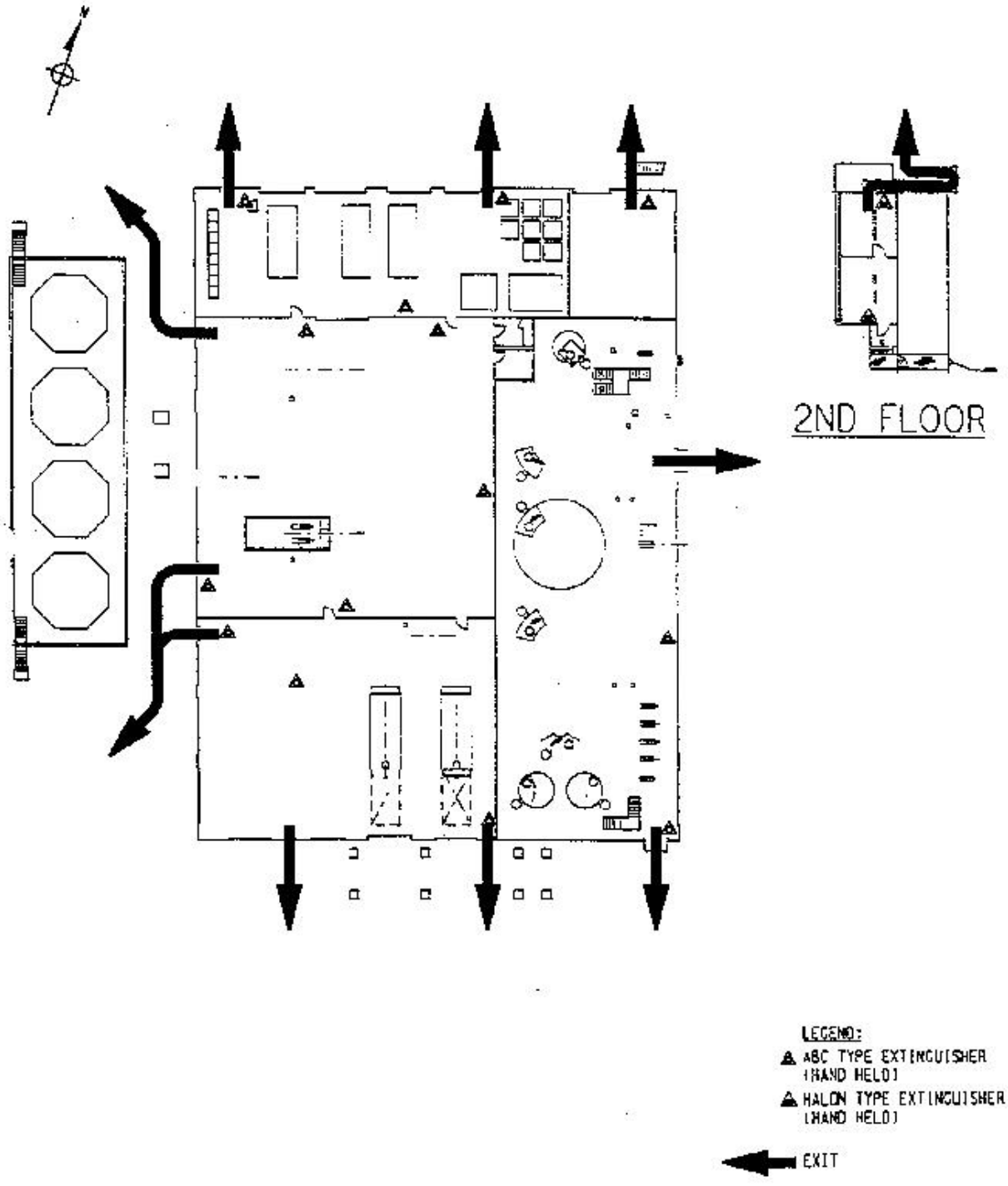


Figure 9-10-5
PUB 1st Floor

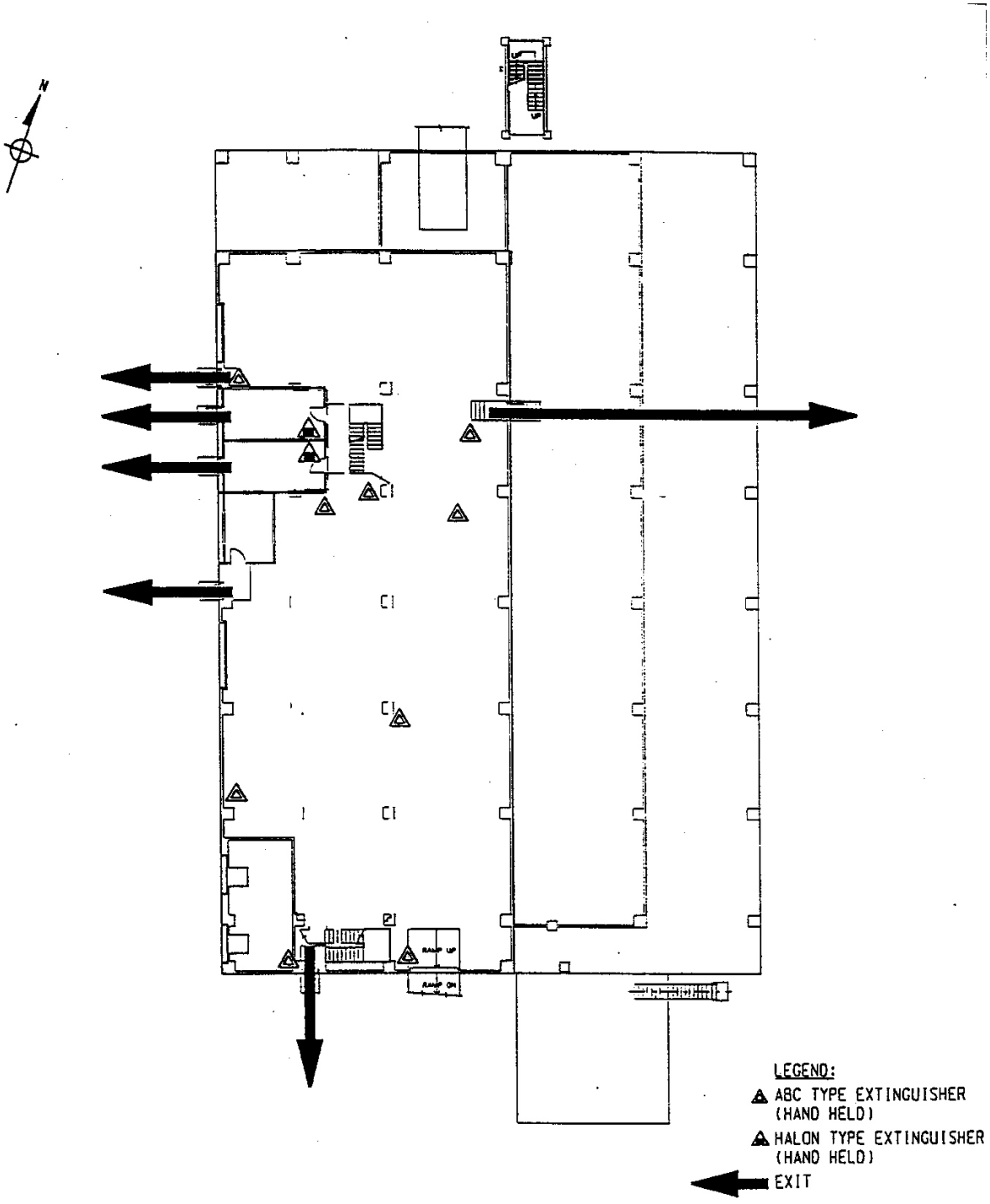


Figure 9-10-6
PAS 100 Ft Level (Ground Floor)

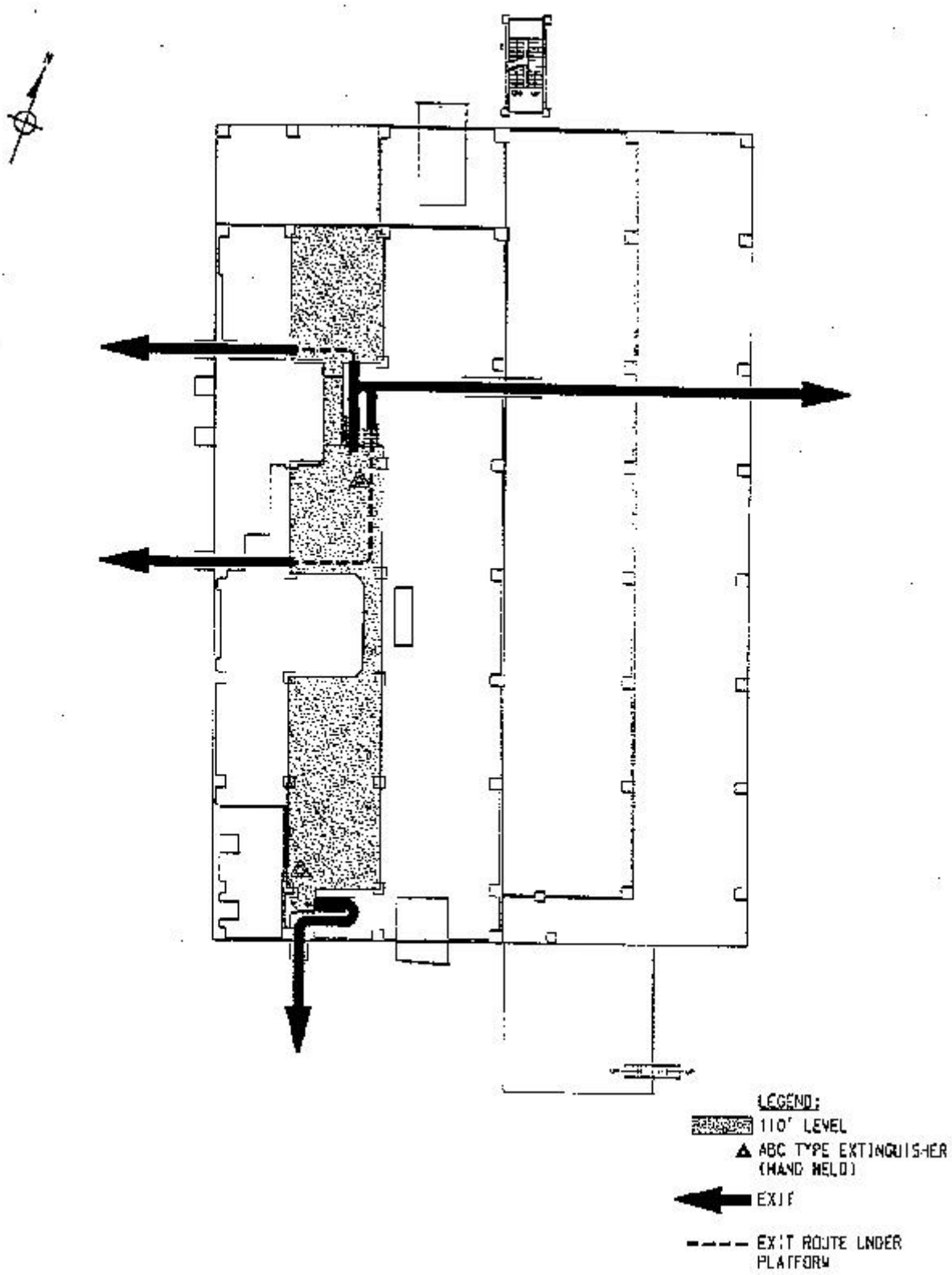


Figure 9-10-7
PAS 110 Ft Level

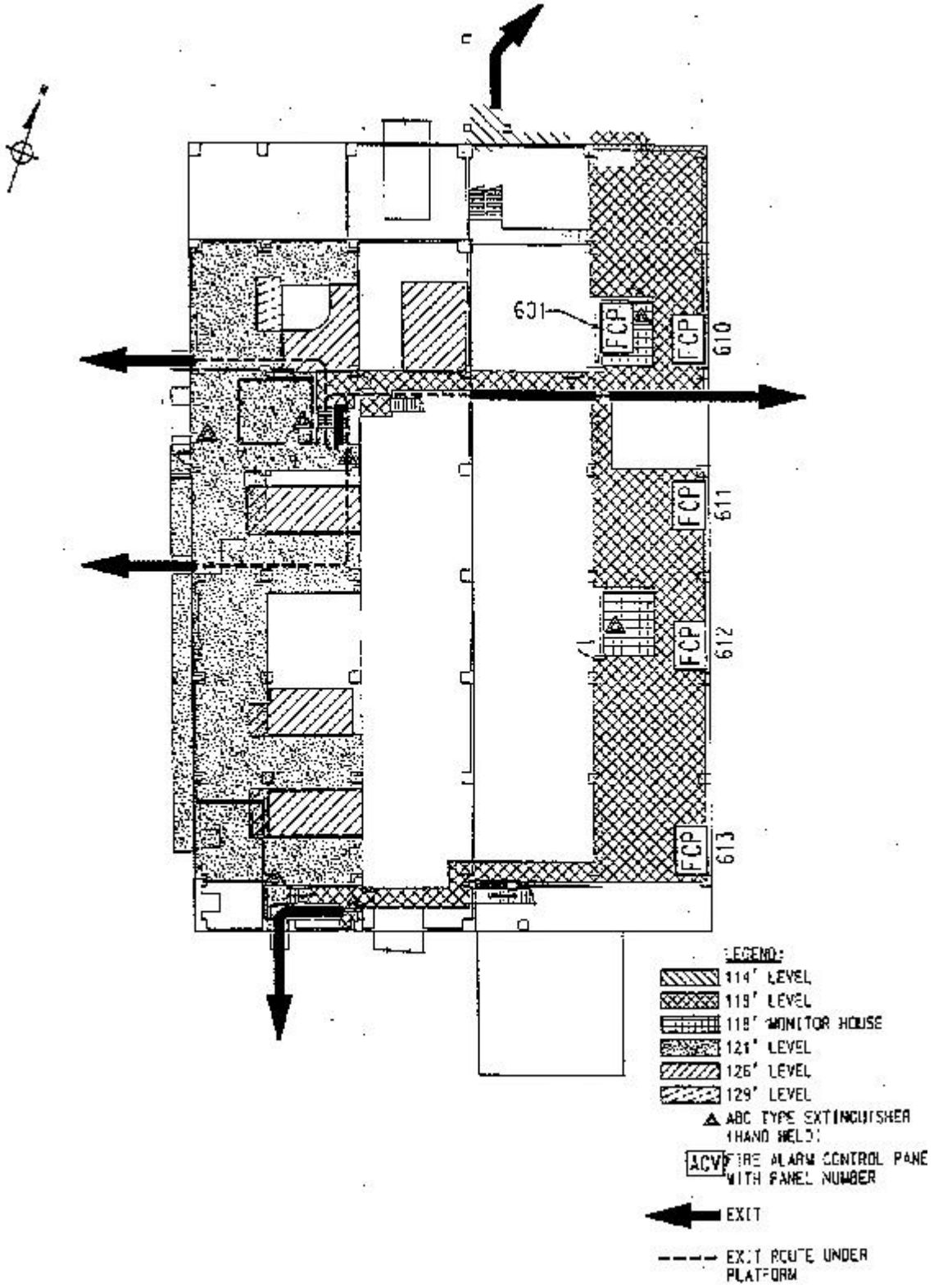


Figure 9-10-8
PAS 114-129 Ft Levels

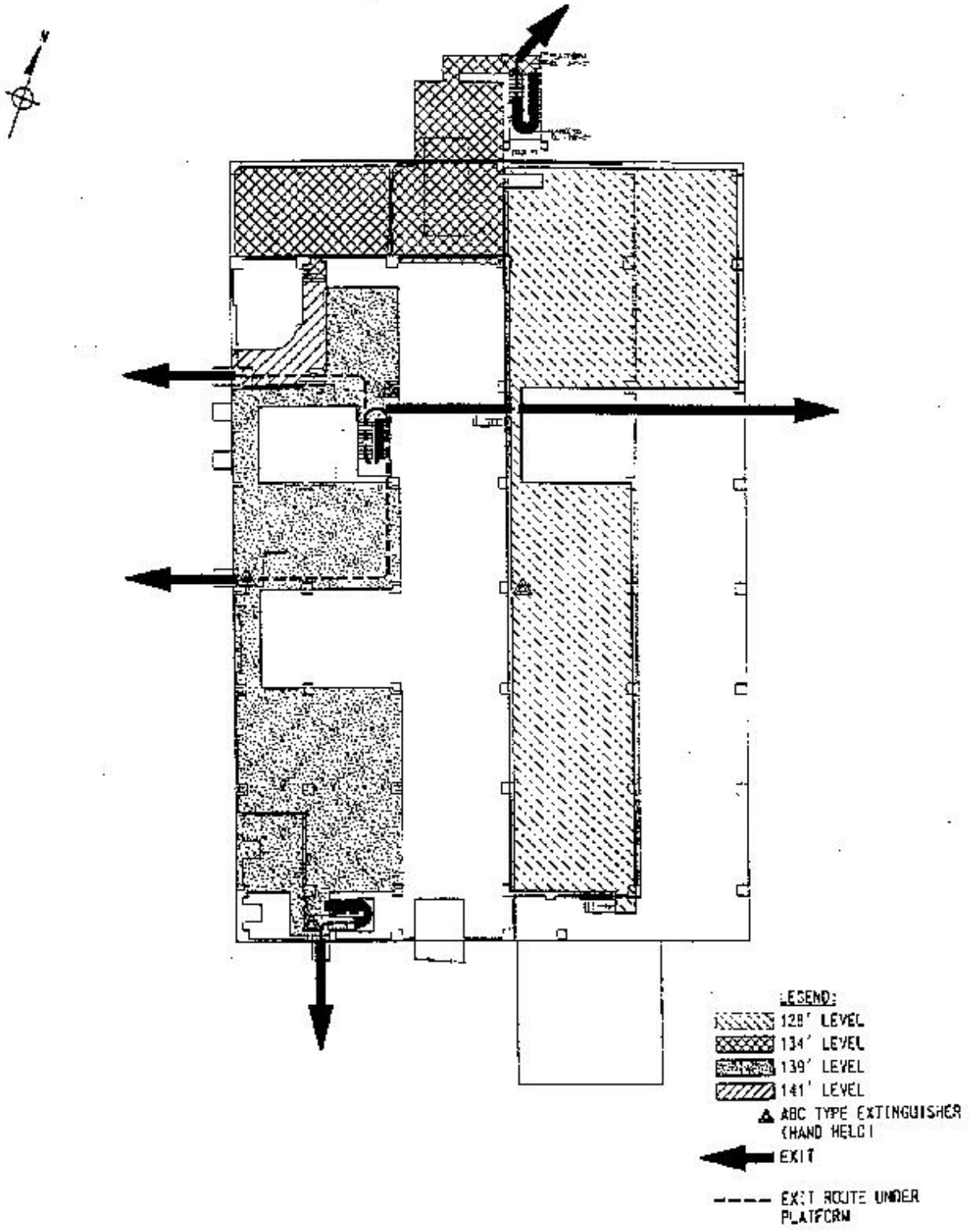


Figure 9-10-9
PAS 128-141 Ft Levels

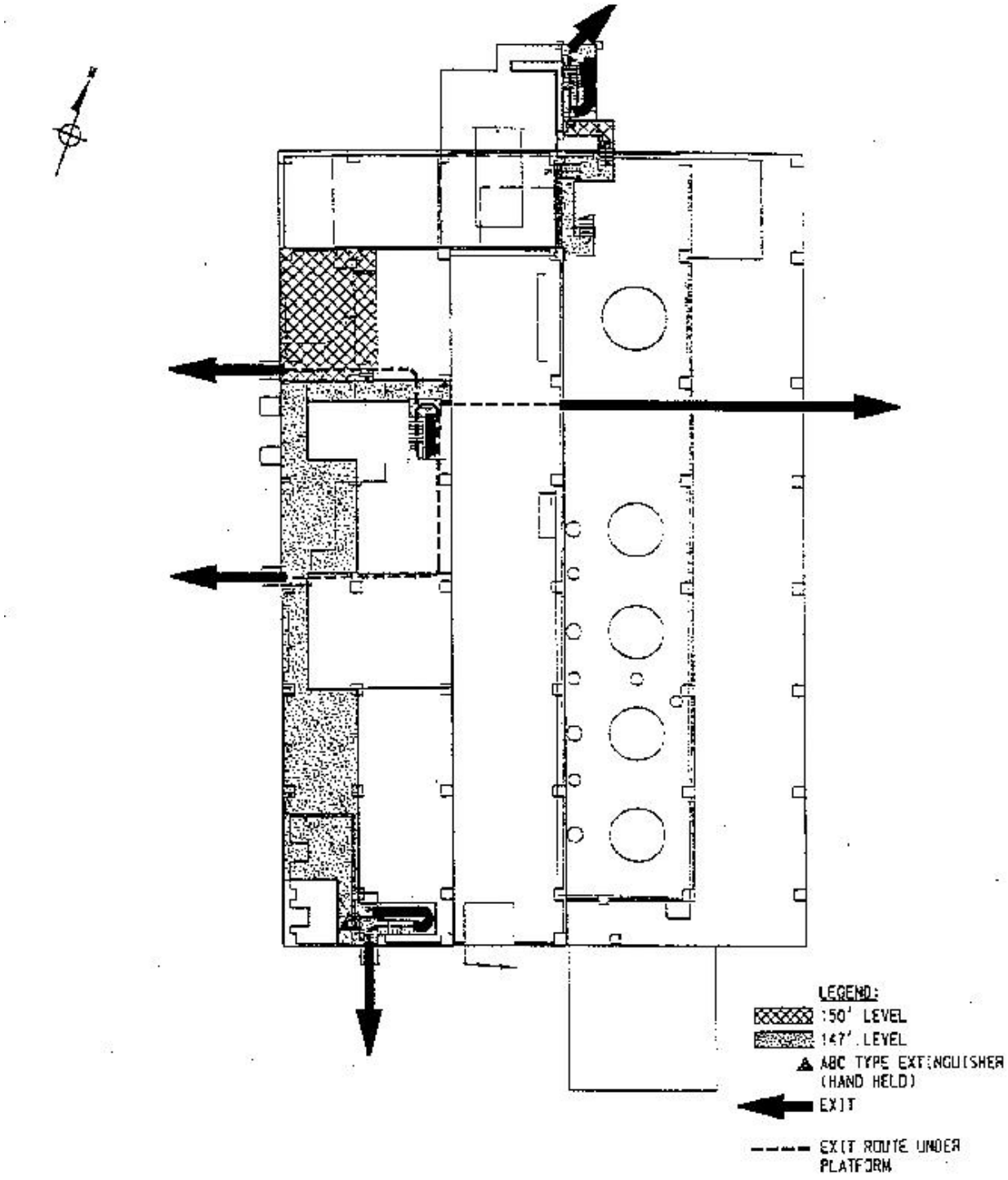


Figure 9-10-10
PAS 147-150 Ft Levels

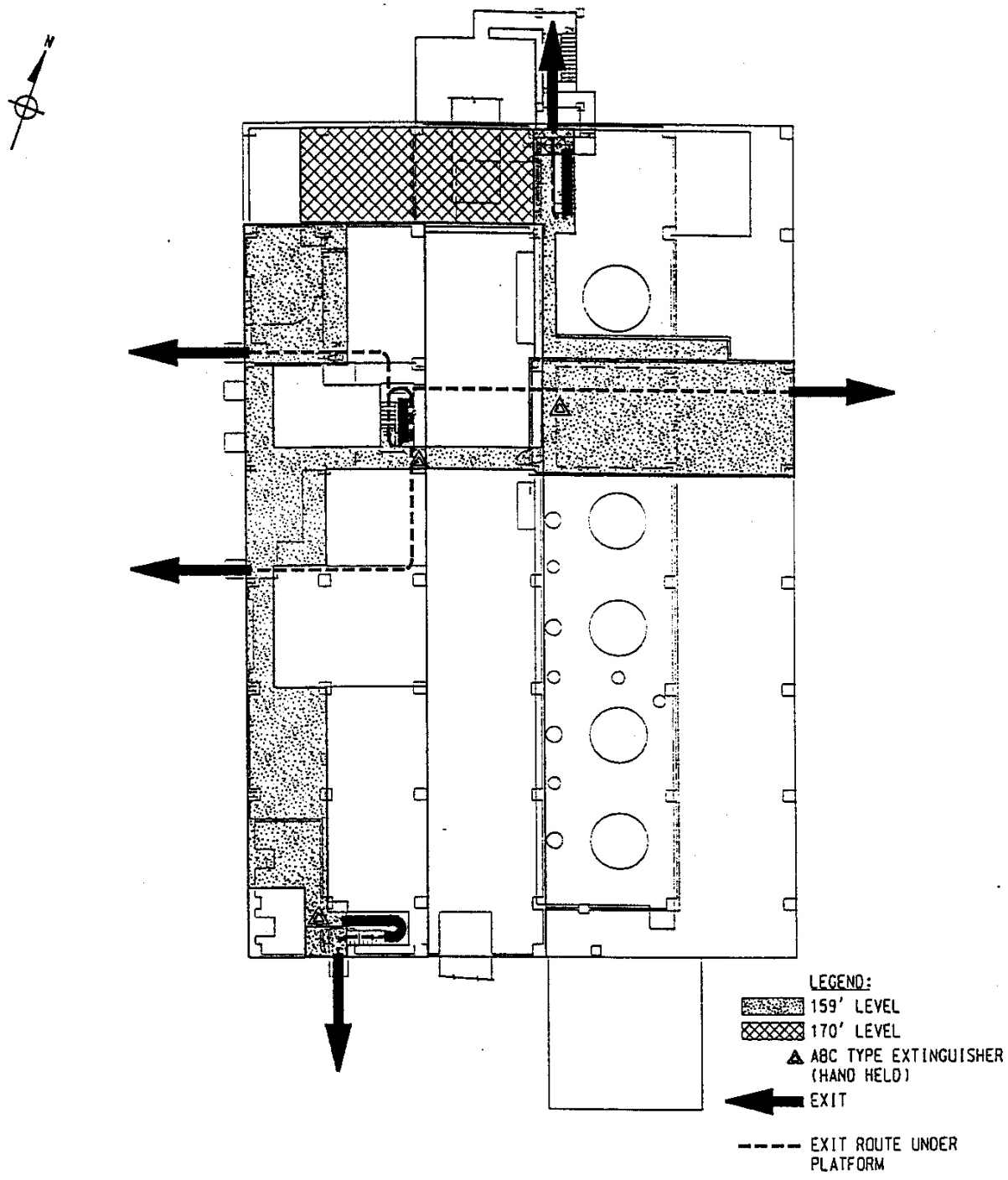


Figure 9-10-11
PAS 159-170 Ft Levels

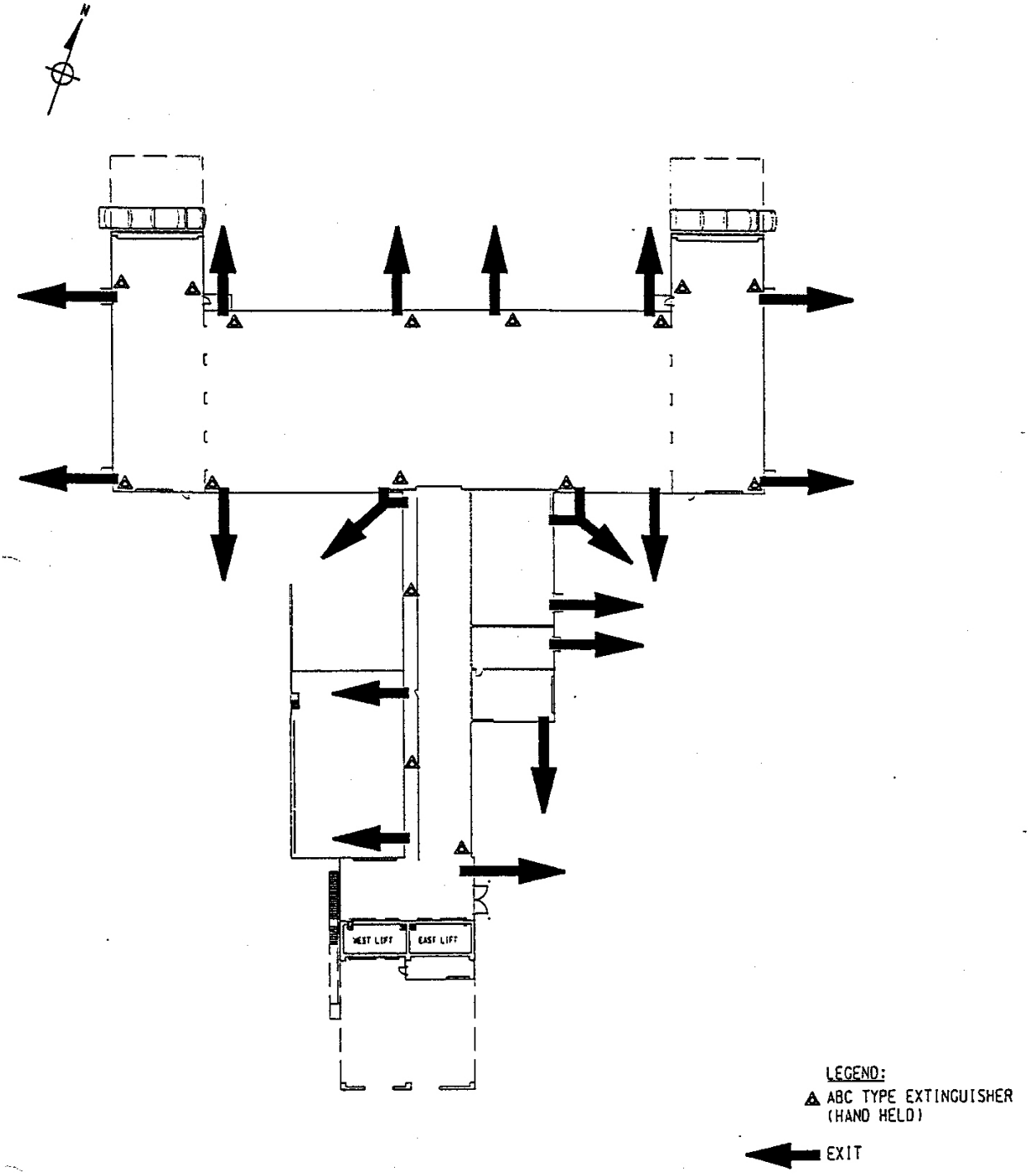


Figure 9-10-12
CHB

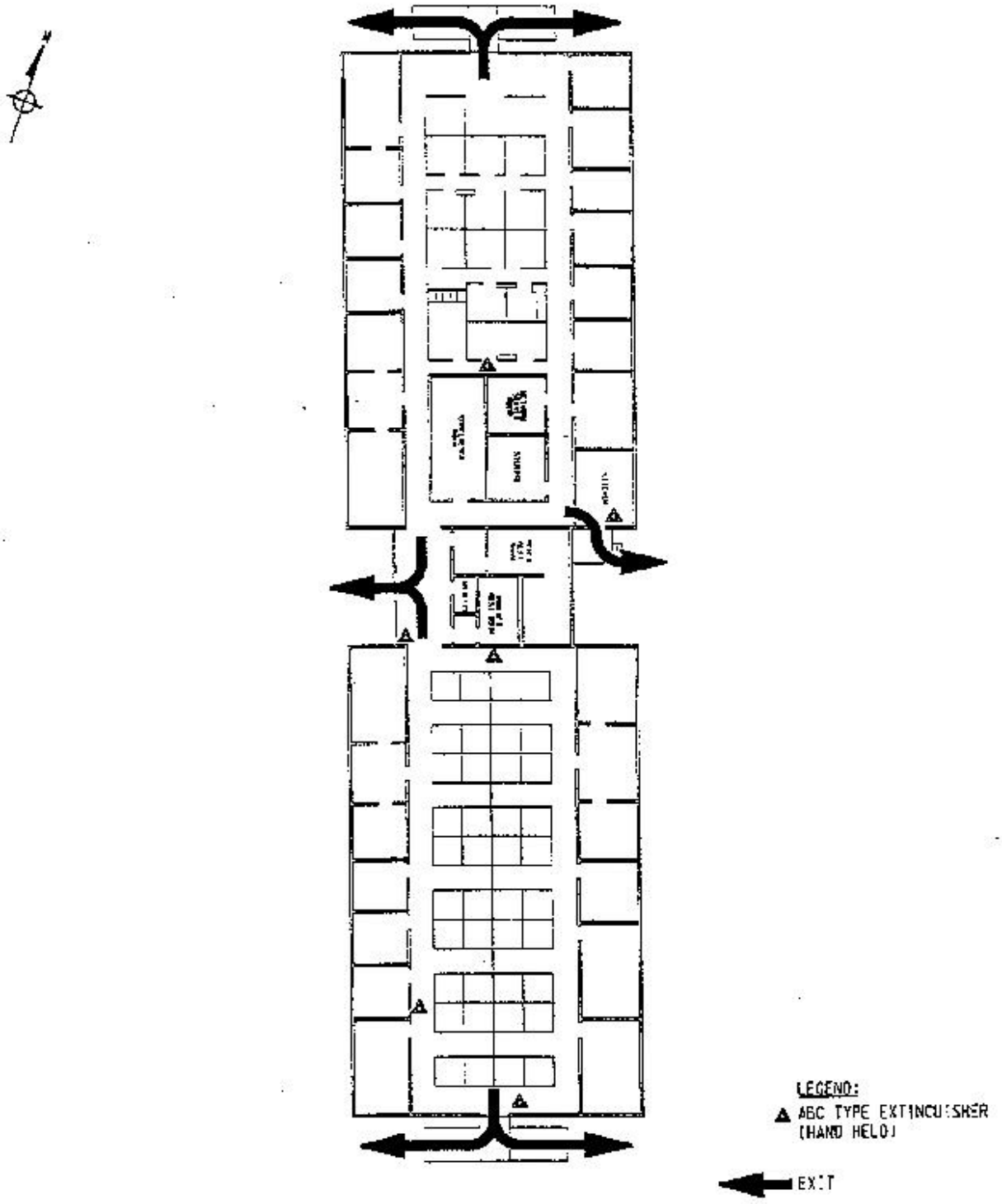


Figure 9-10-13
PSB

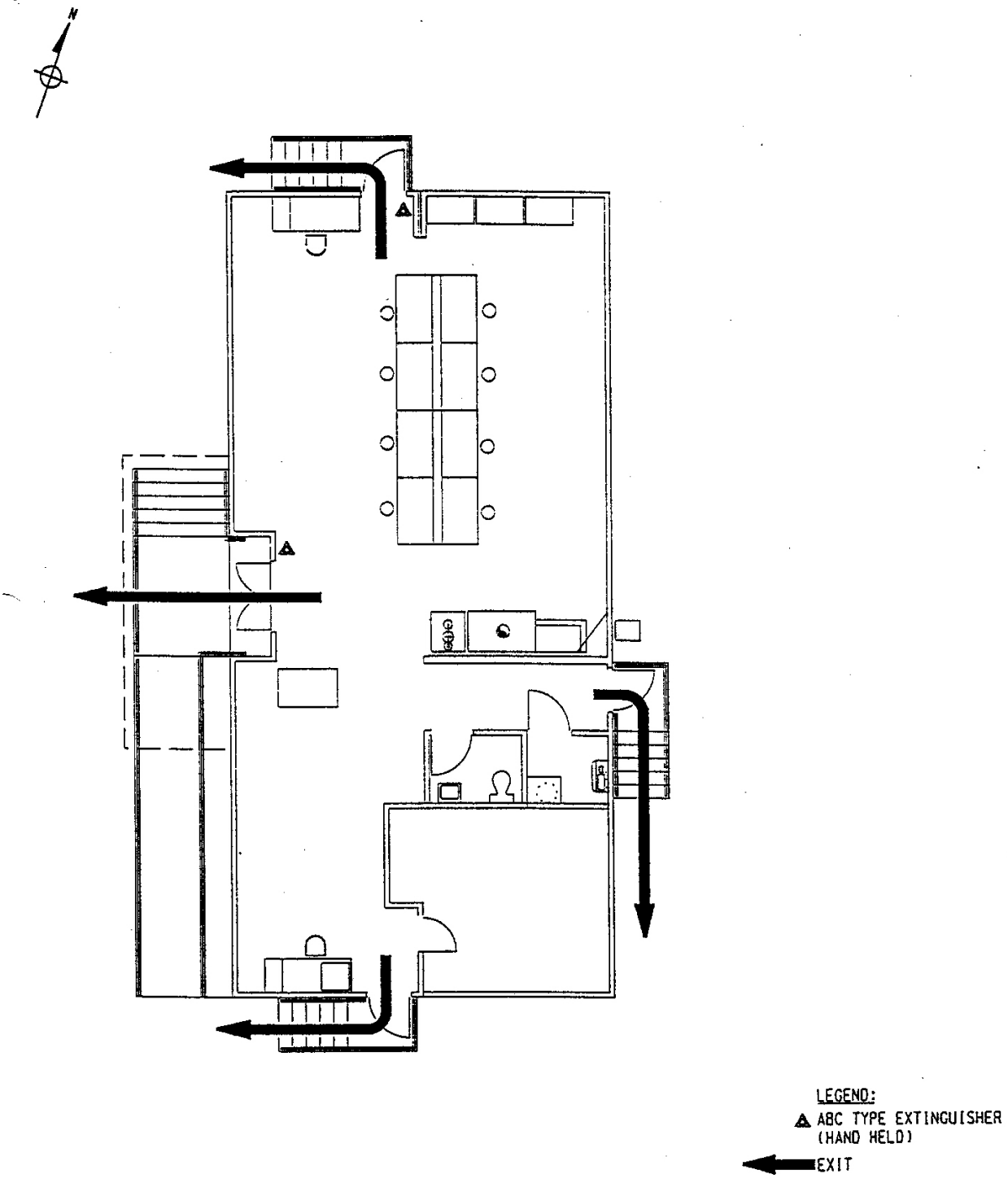


Figure 9-10-14
MSB Plan

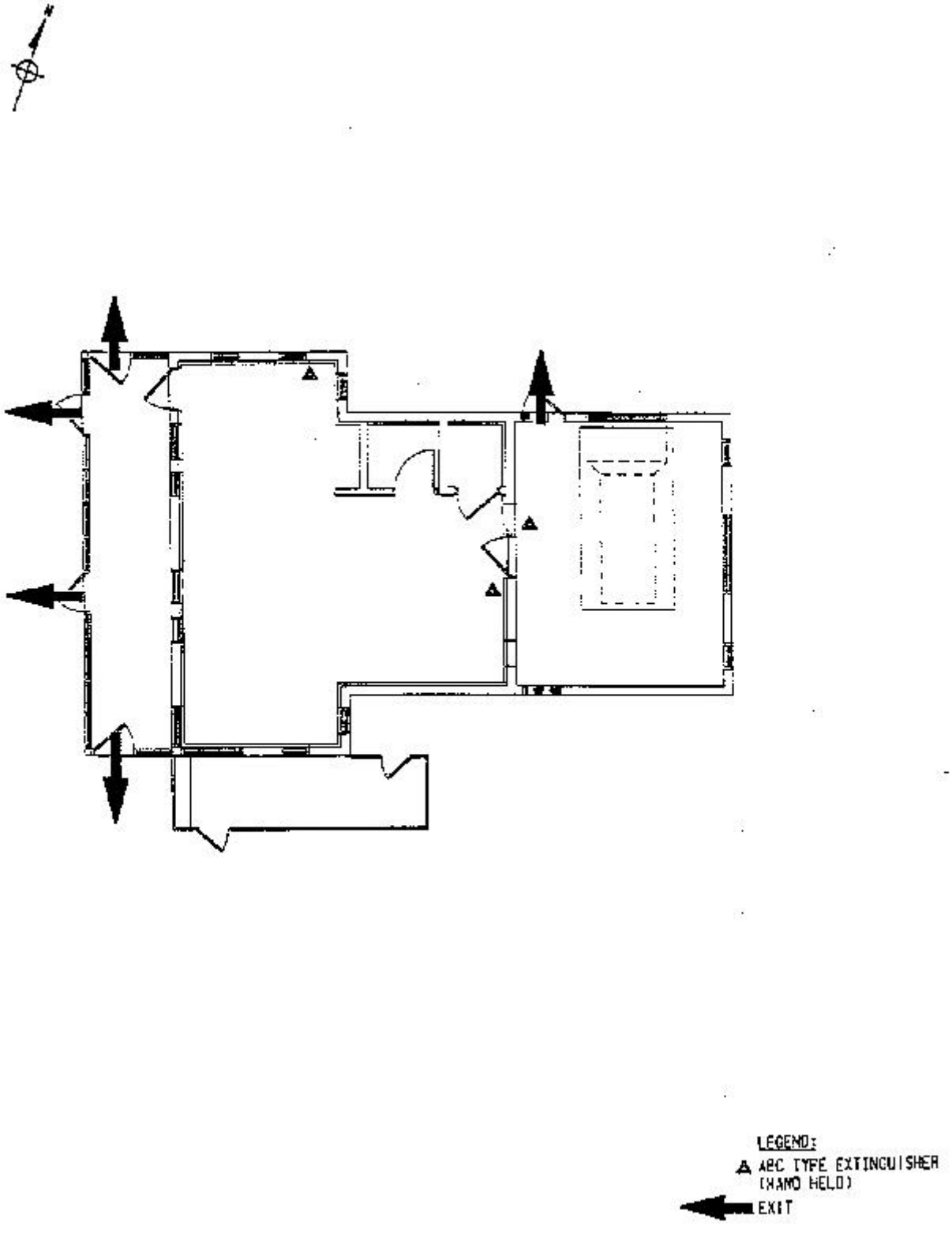


Figure 9-10-15
ECF Plan

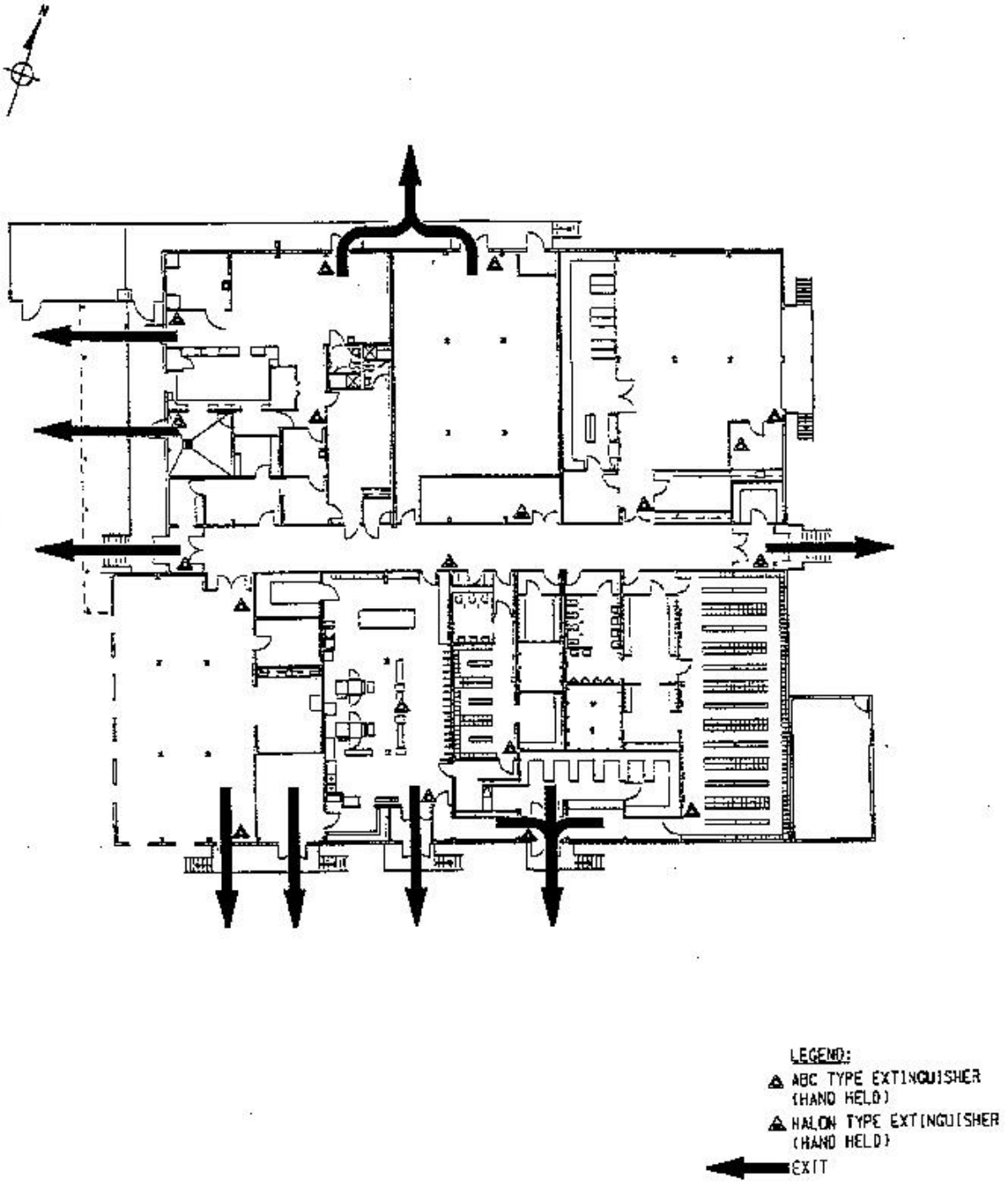


Figure 9-10-16
PMB Plan

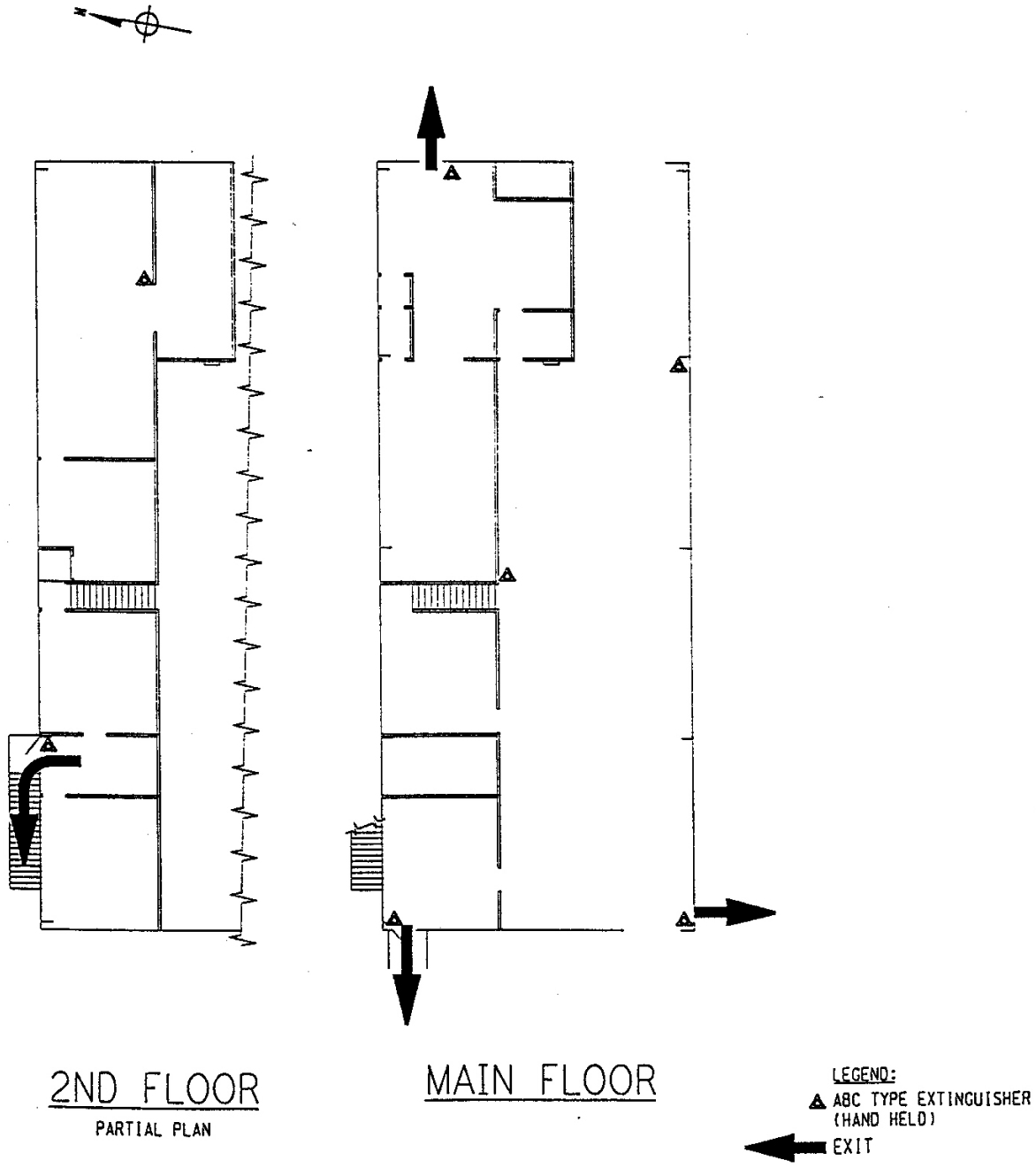


Figure 9-10-17
S-1 Plan

Figure 9-10-18
S-2 Plan

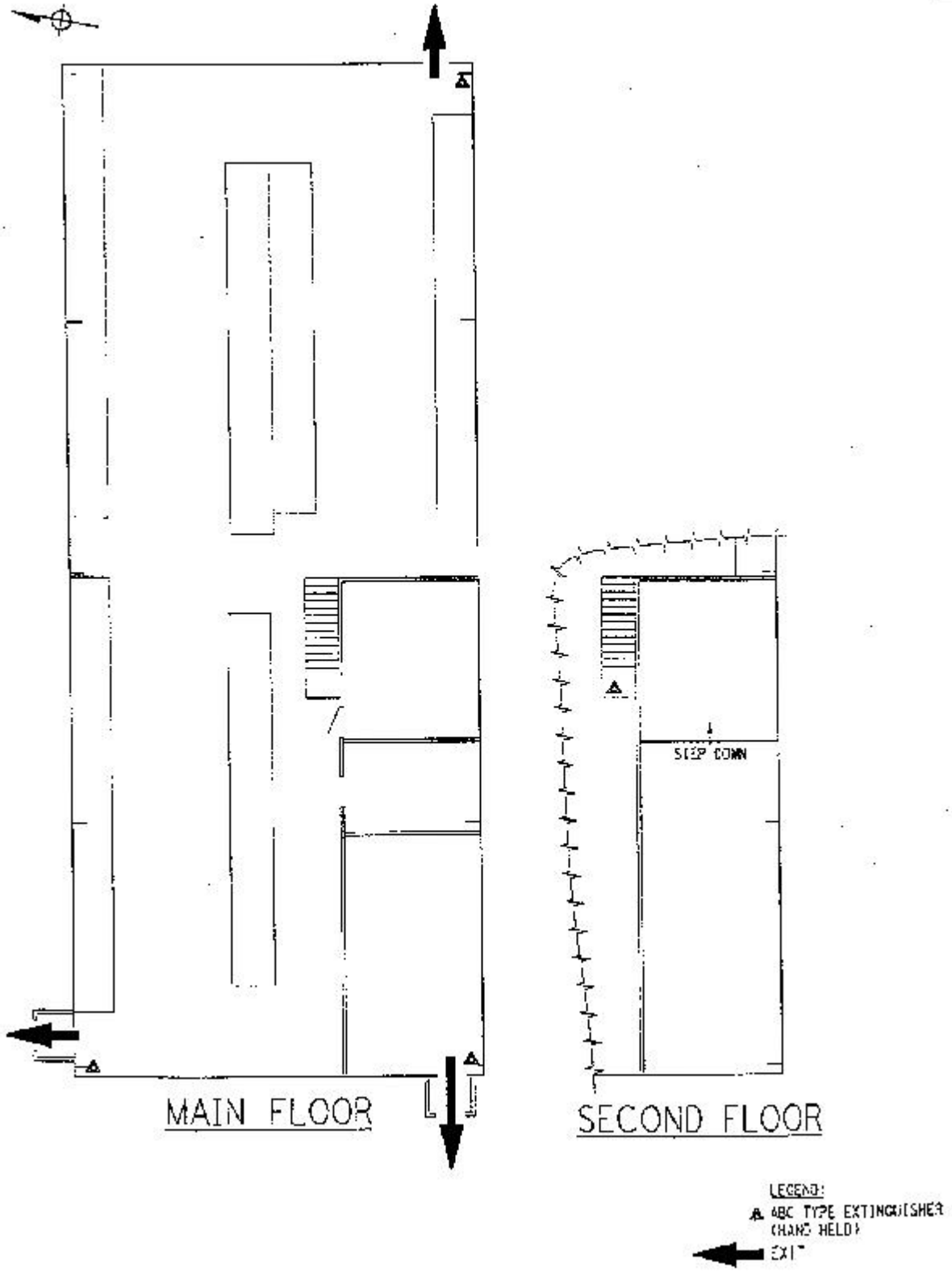


Figure 9-10-19
S-3 Plan

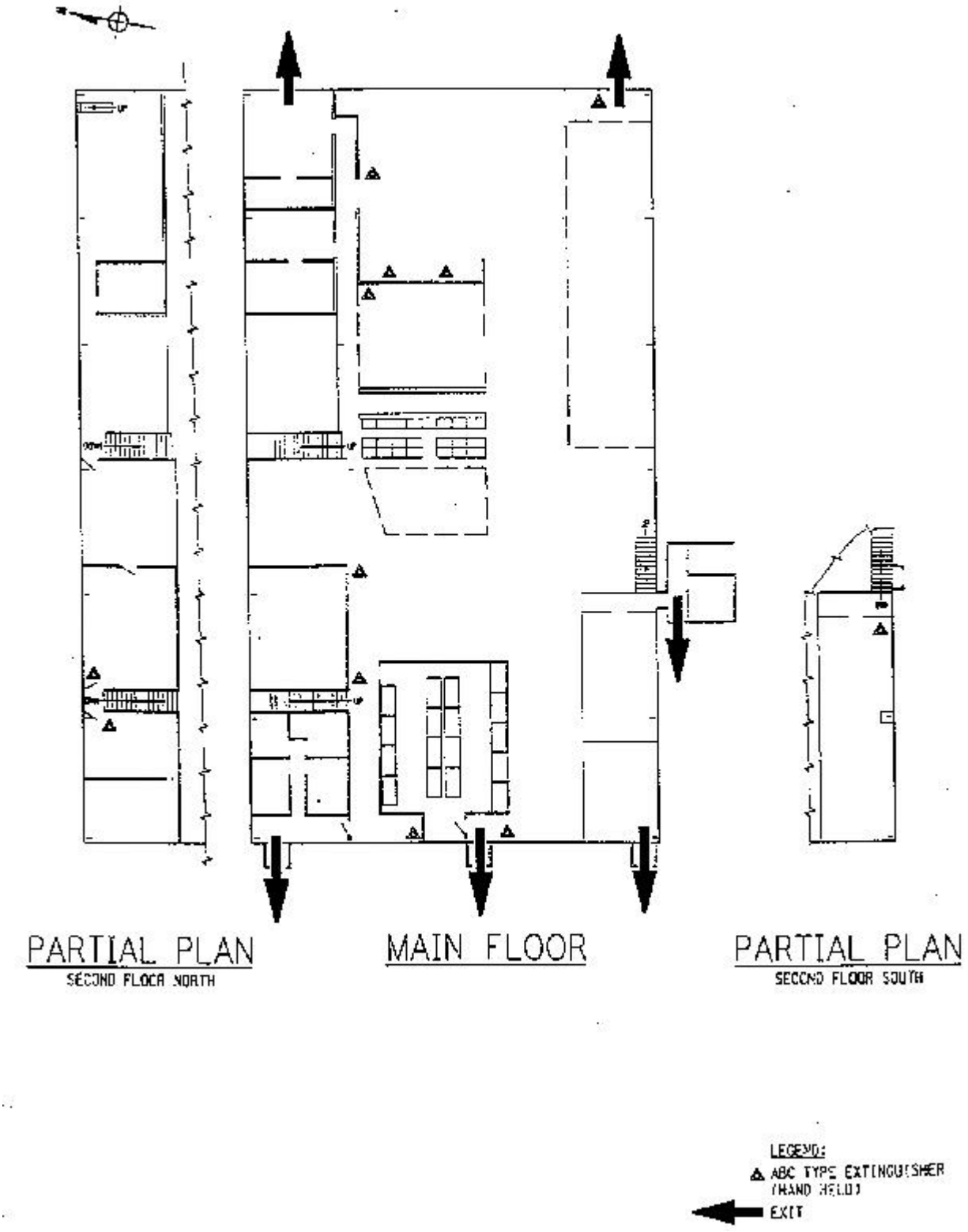


Figure 9-10-20
S-4 Plan

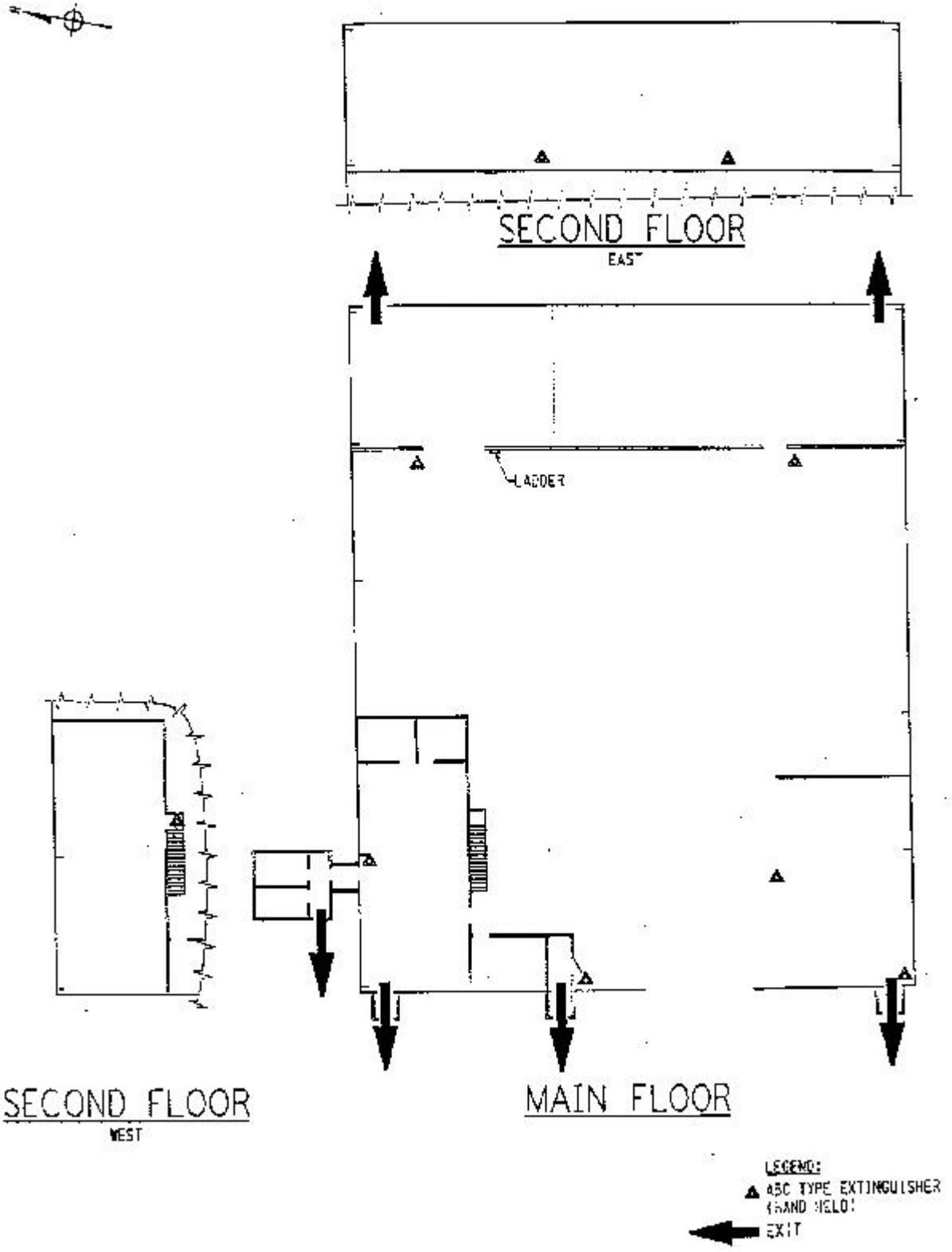


Figure 9-10-21
S-5 Plan

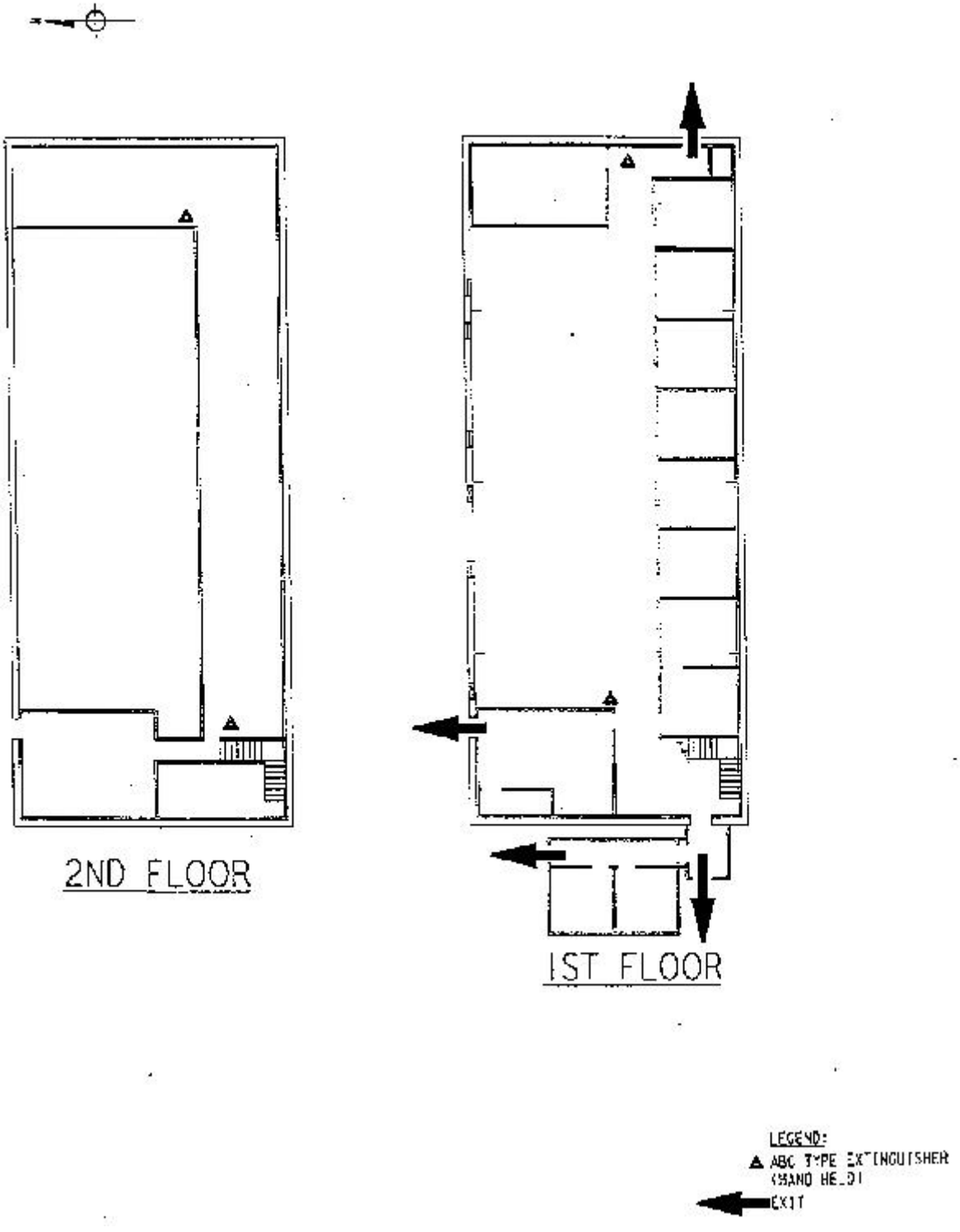


Figure 9-10-22
S-6 Plan

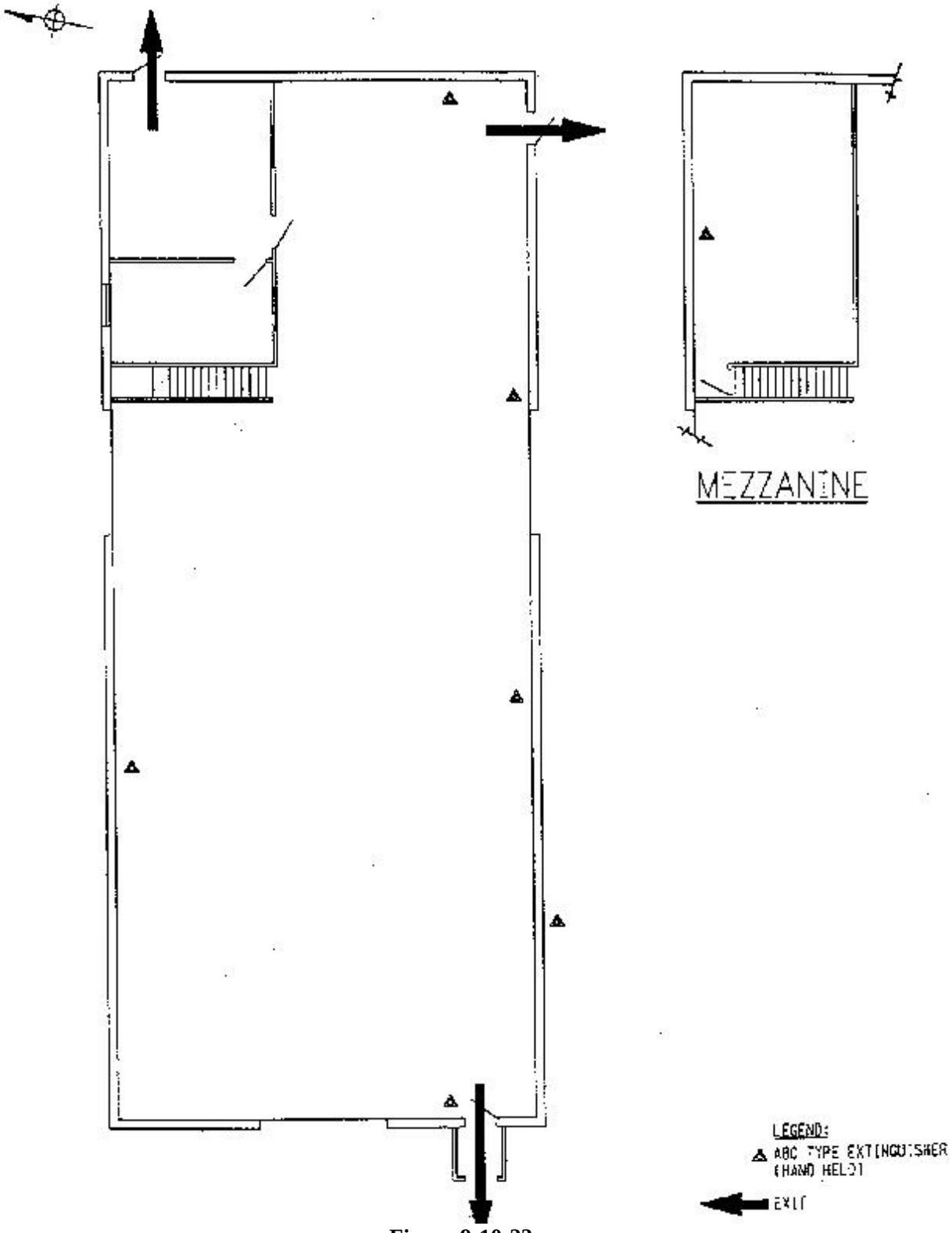


Figure 9-10-23
S-7

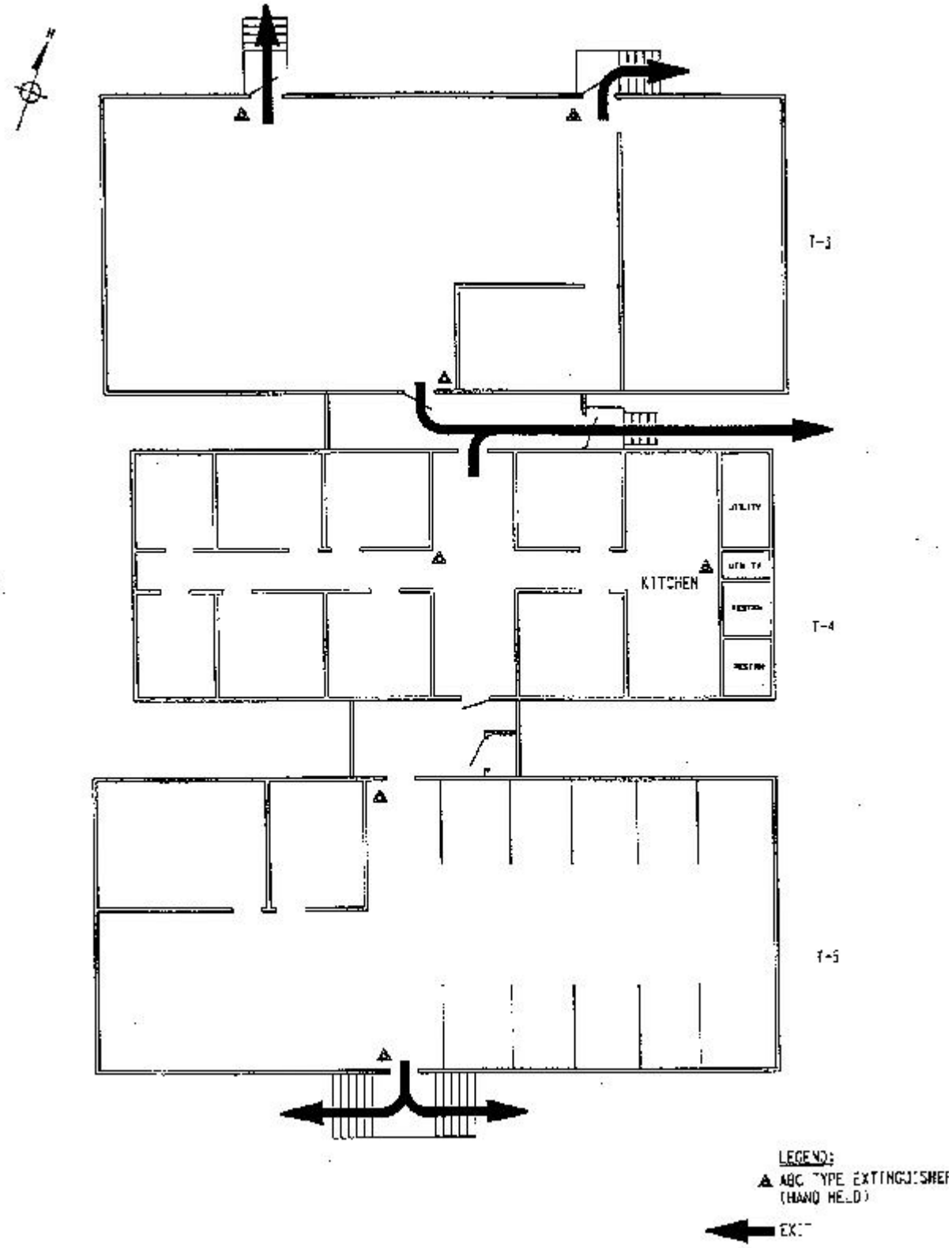


Figure 9-10-24
Quality/Environmental

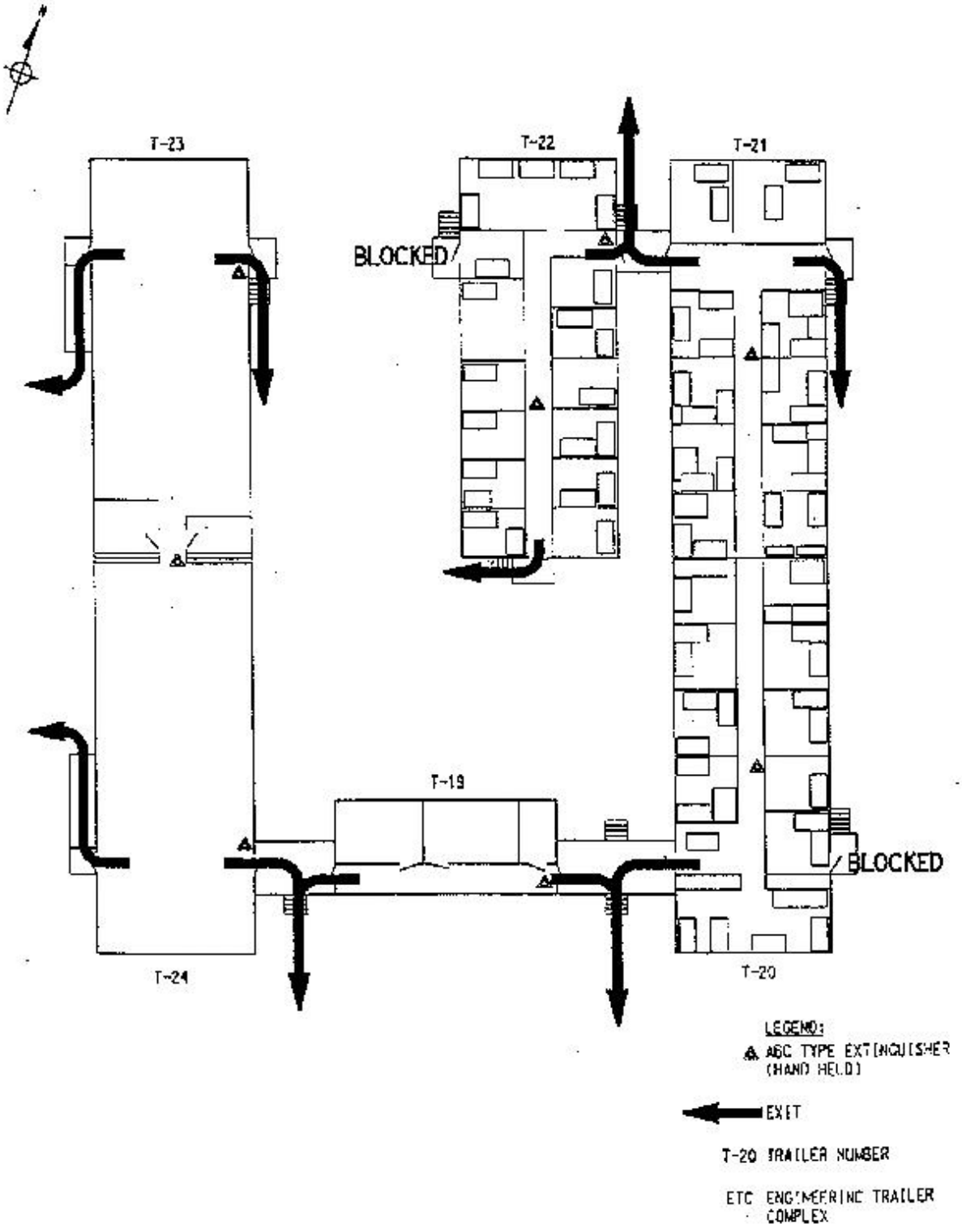


Figure 9-10-25
ETC

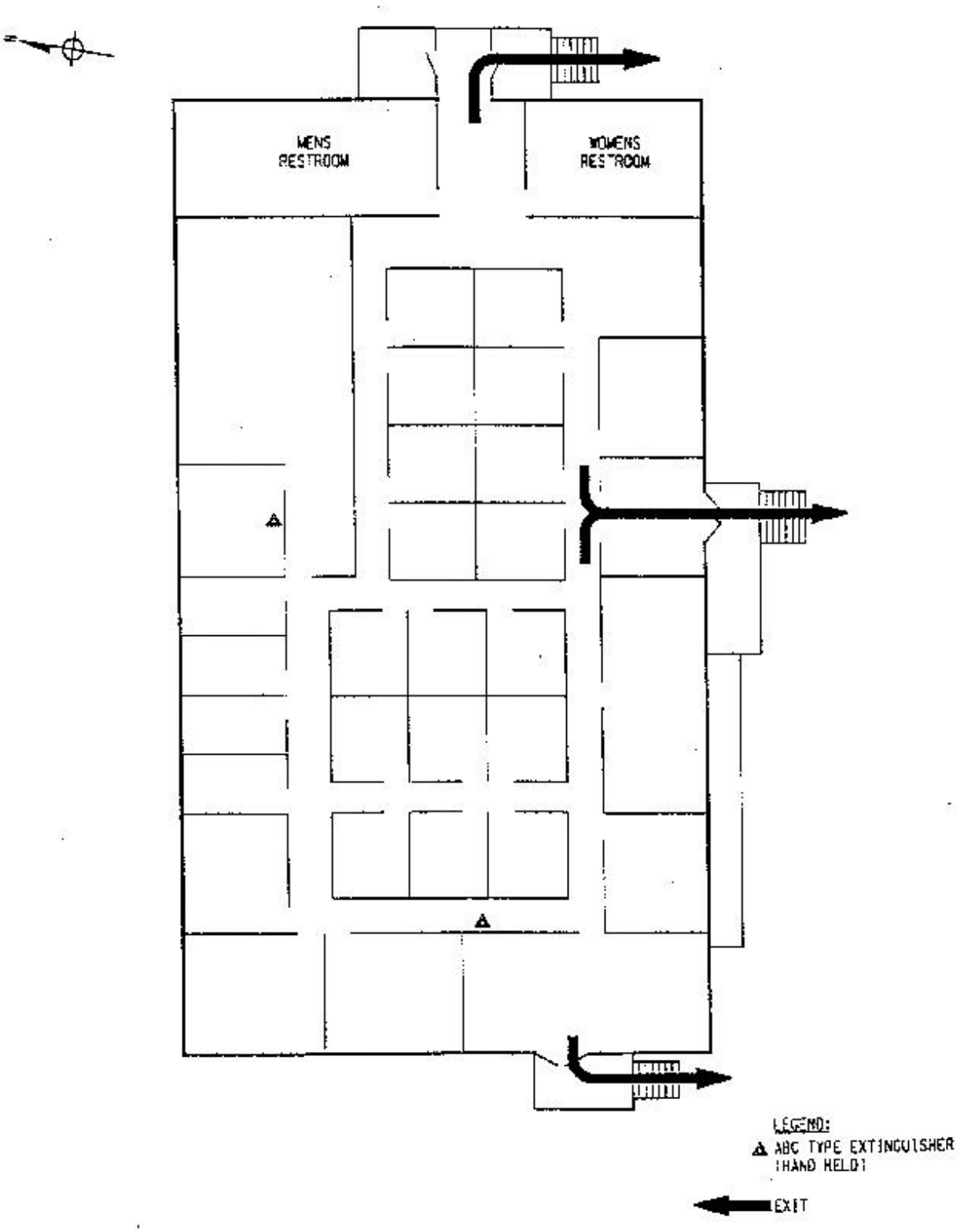


Figure 9-10-26
T-25

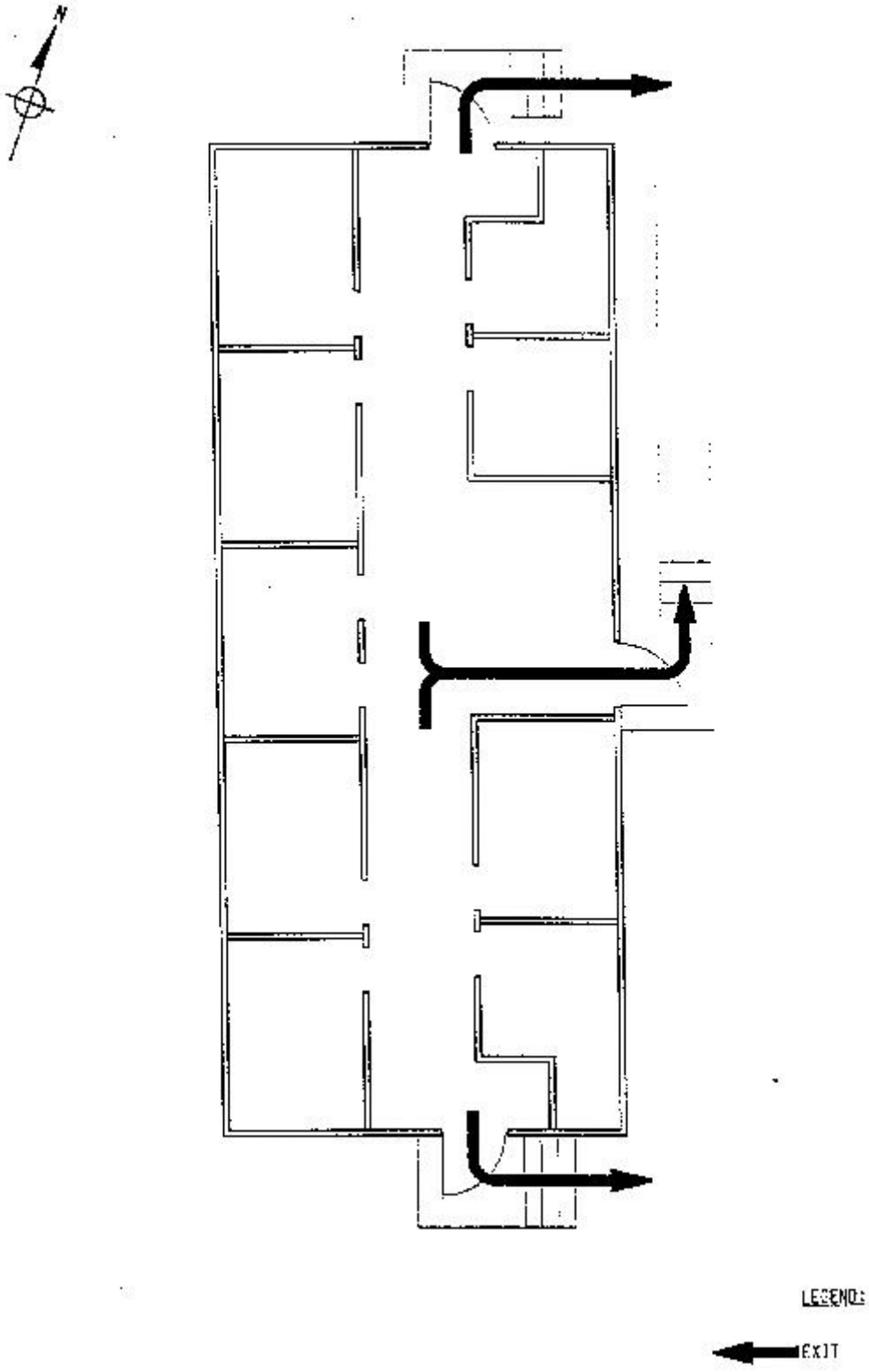


Figure 9-10-27
T-26

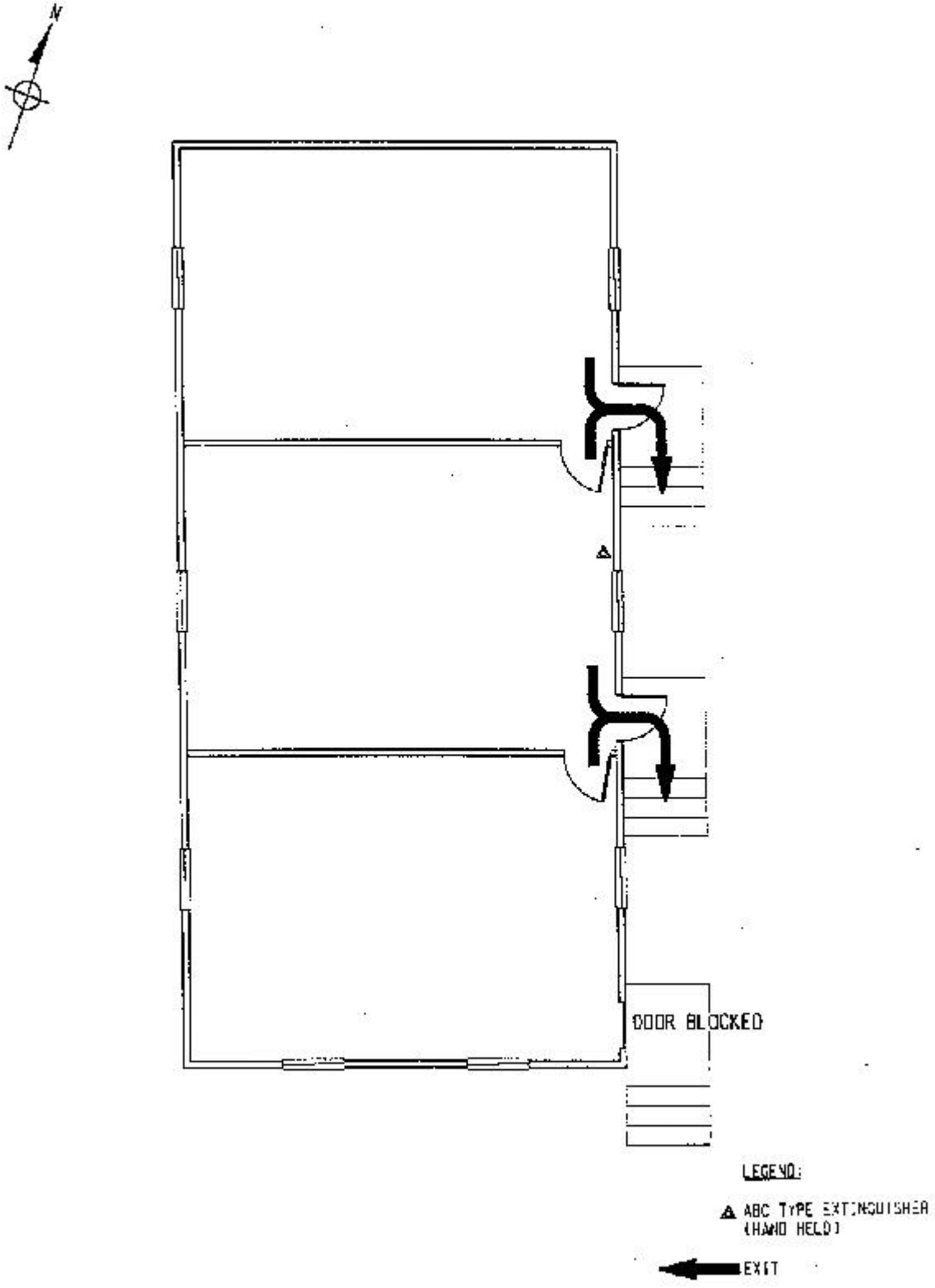


Figure 9-10-28
T-27

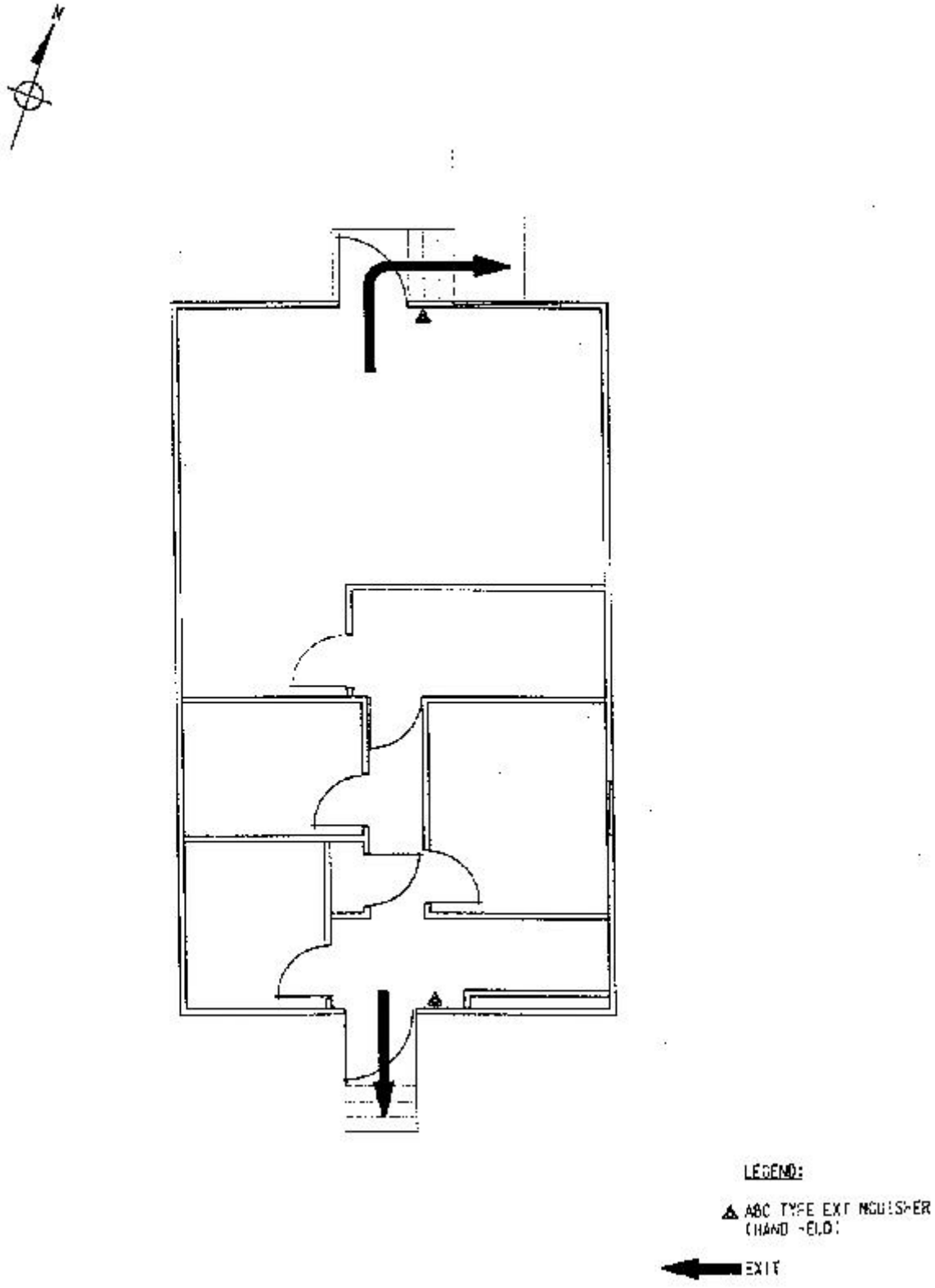


Figure 9-10-29
T-28

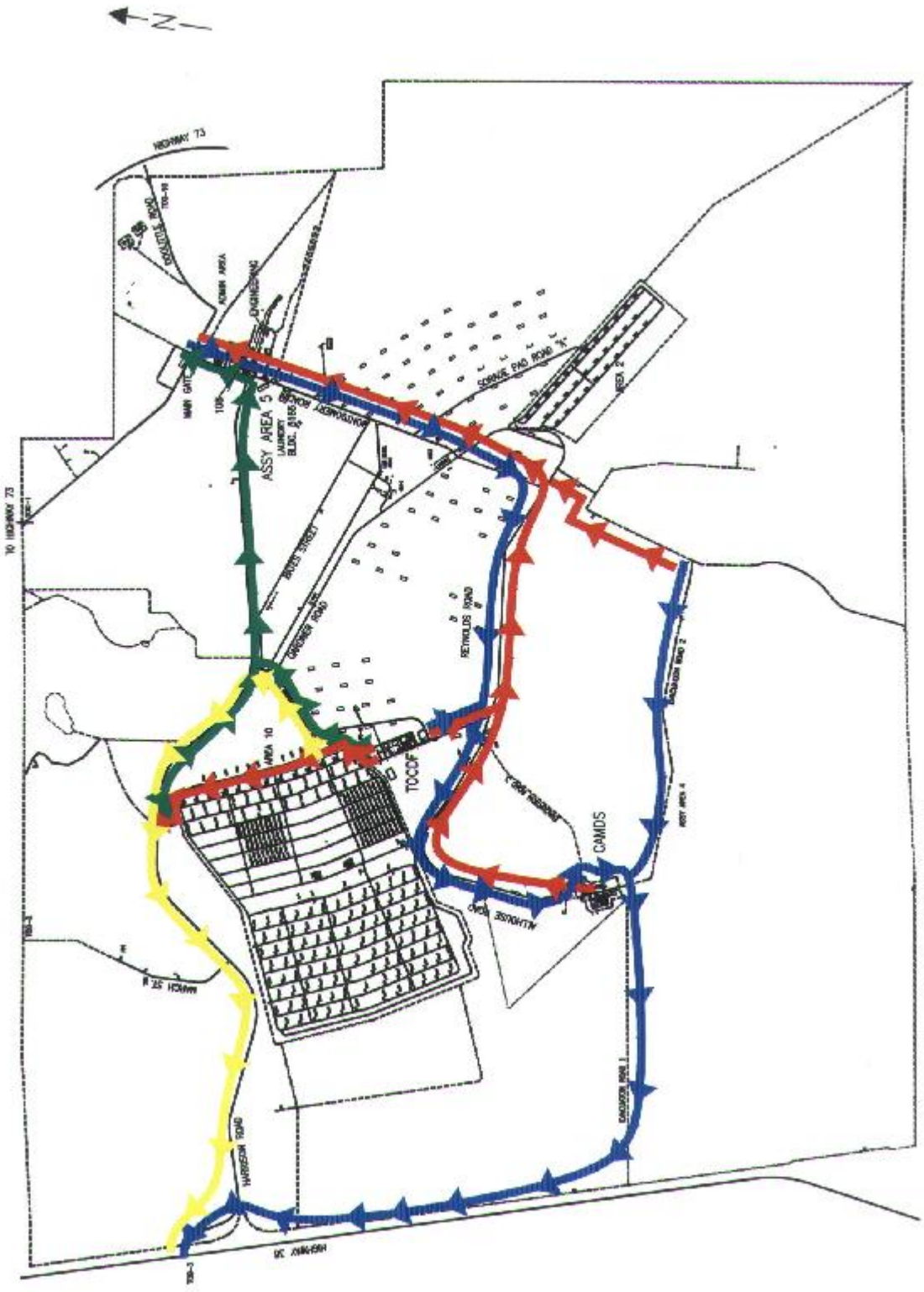
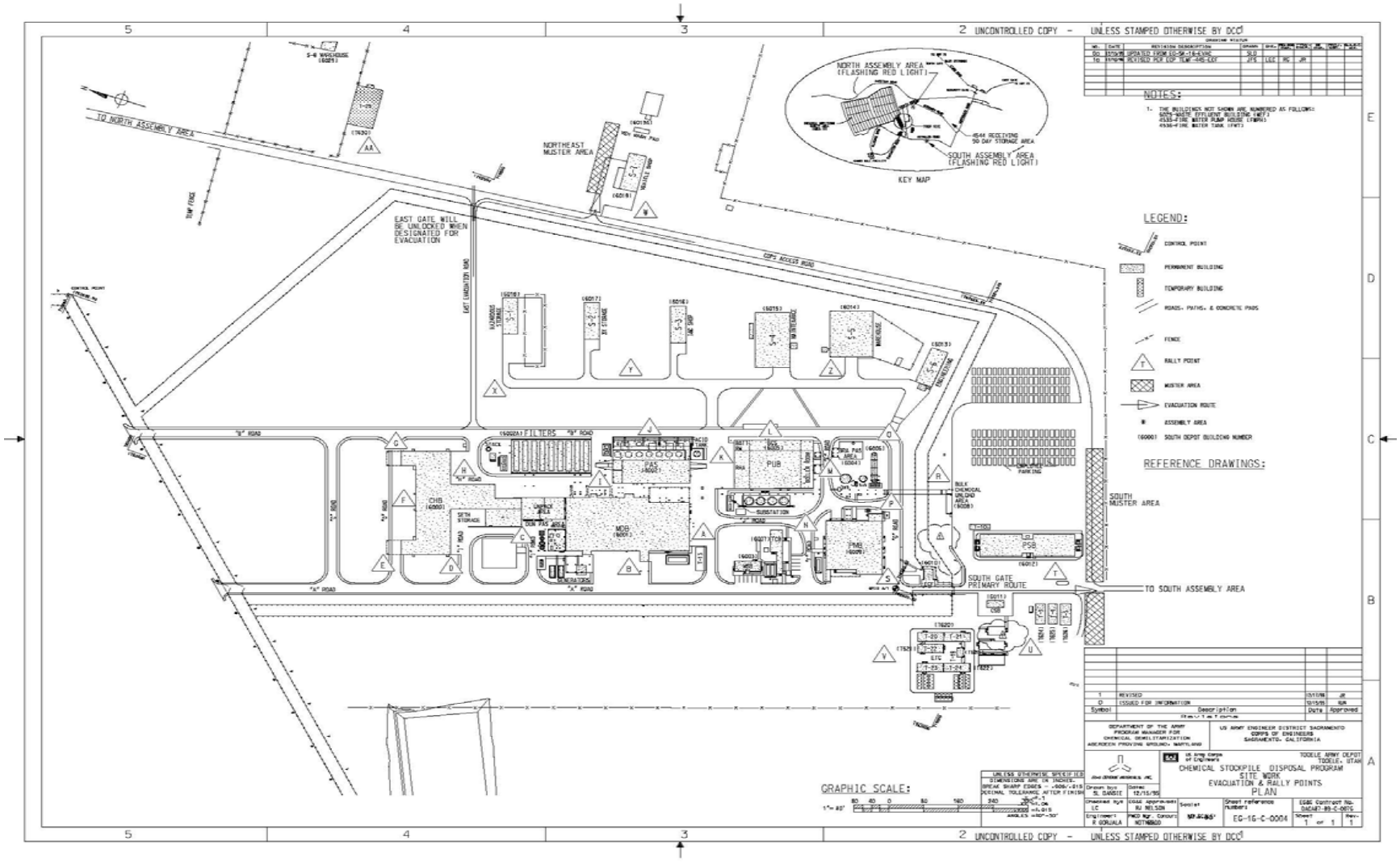
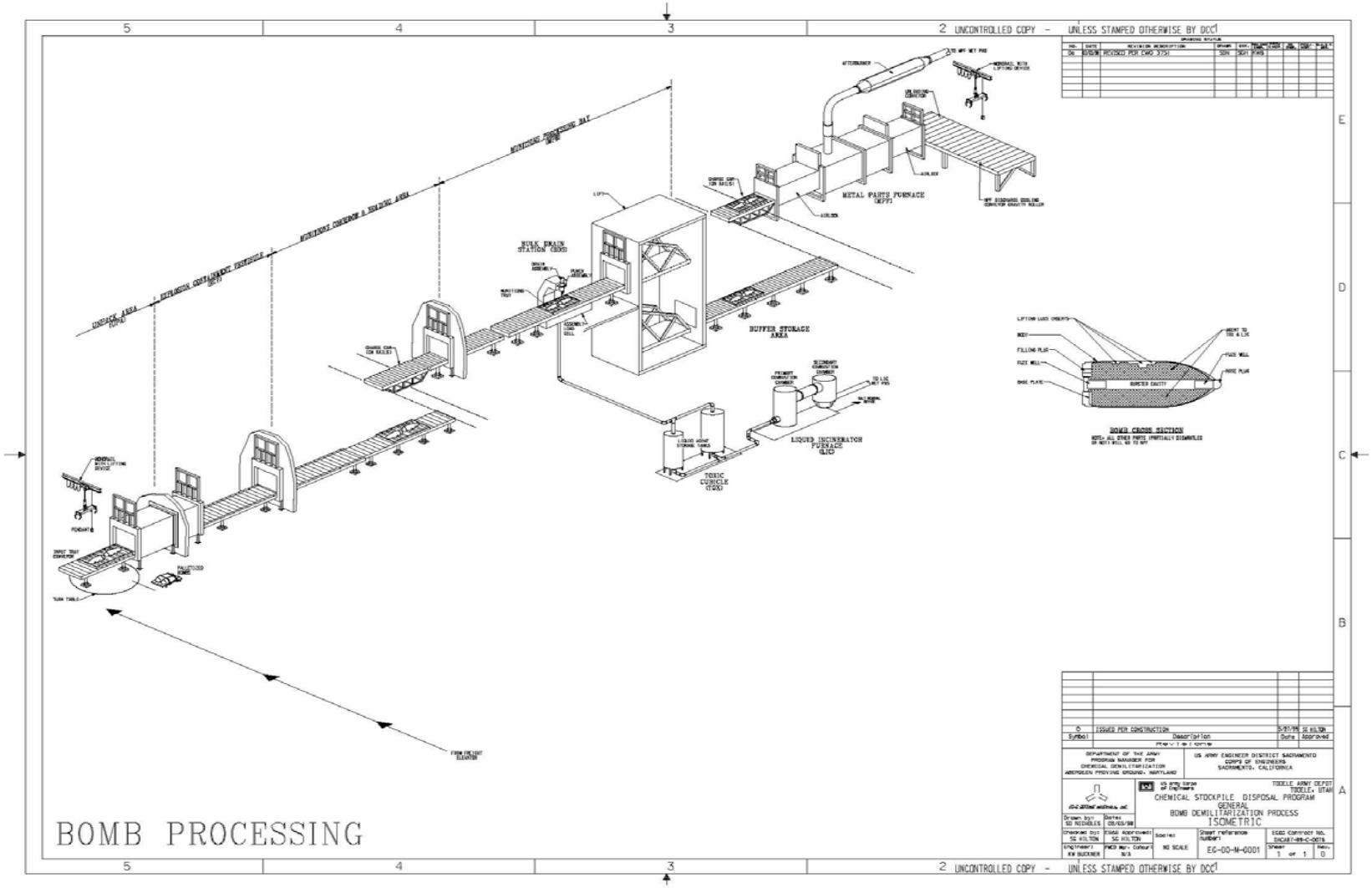


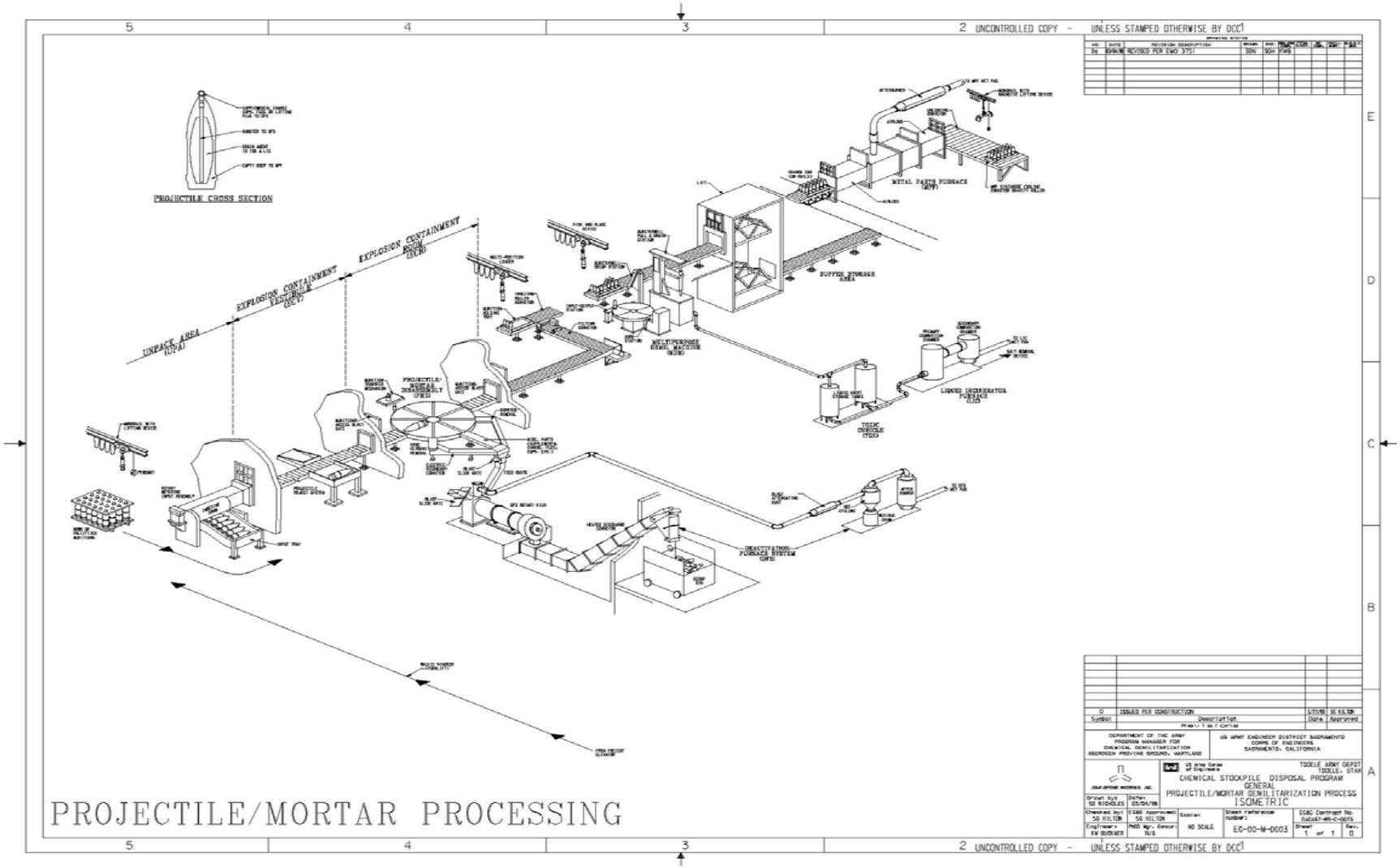
Figure 9-10-30
DCD Site Evacuation Map



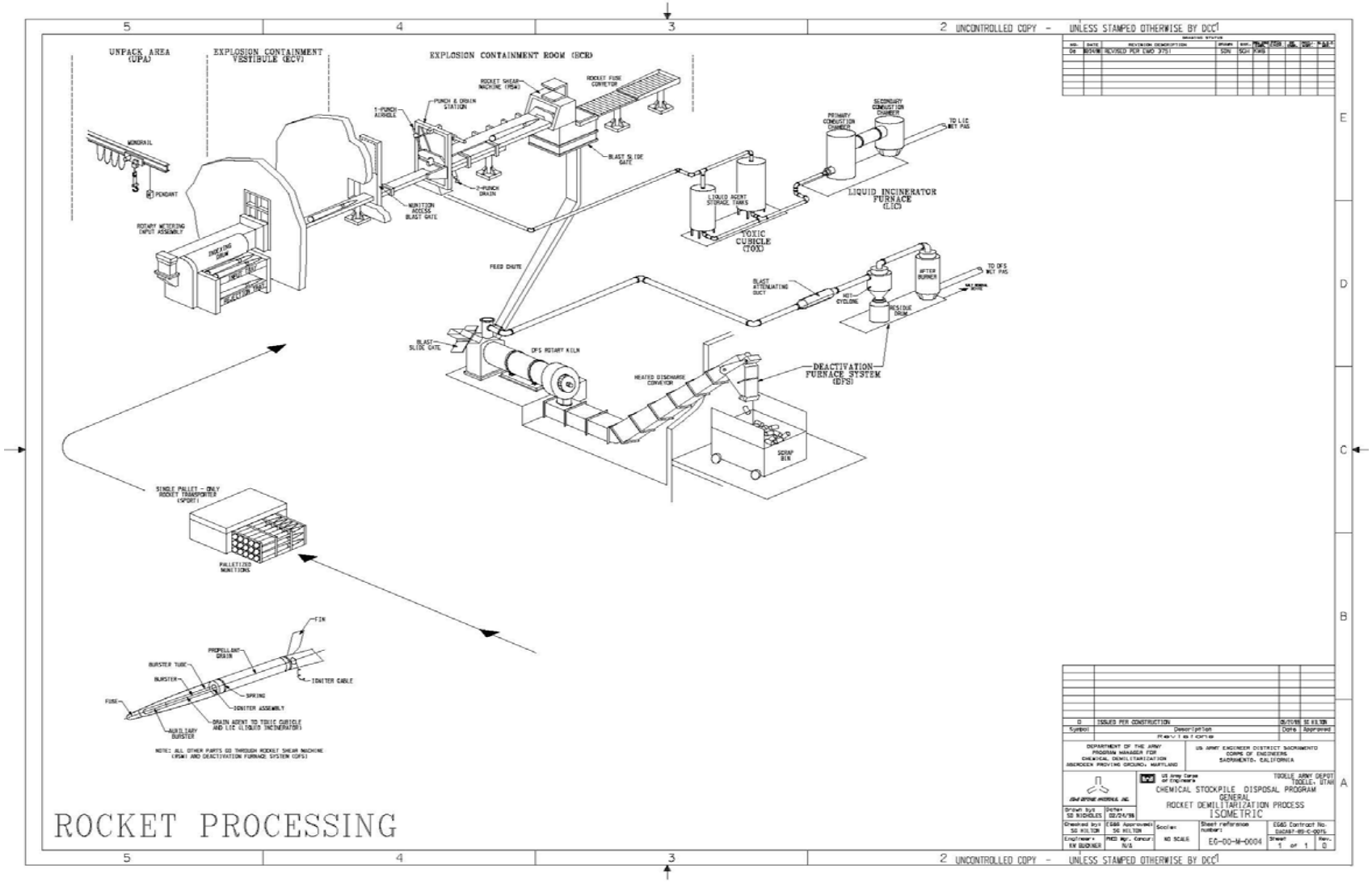
EG-16-C-0004
Evacuation & Rally Points Plan



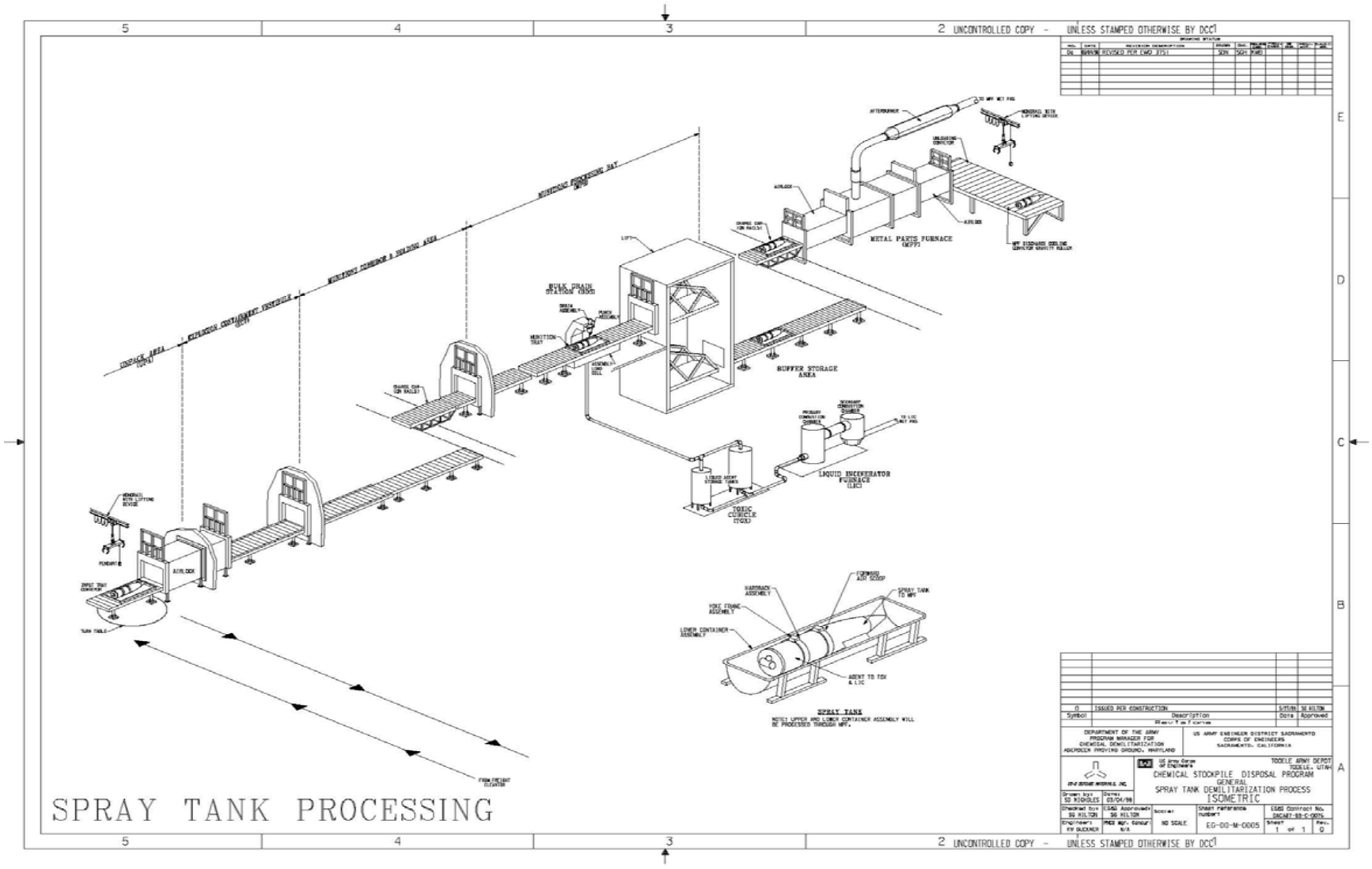
EG-00-M-0001
Bomb Demilitarization Process Isometric



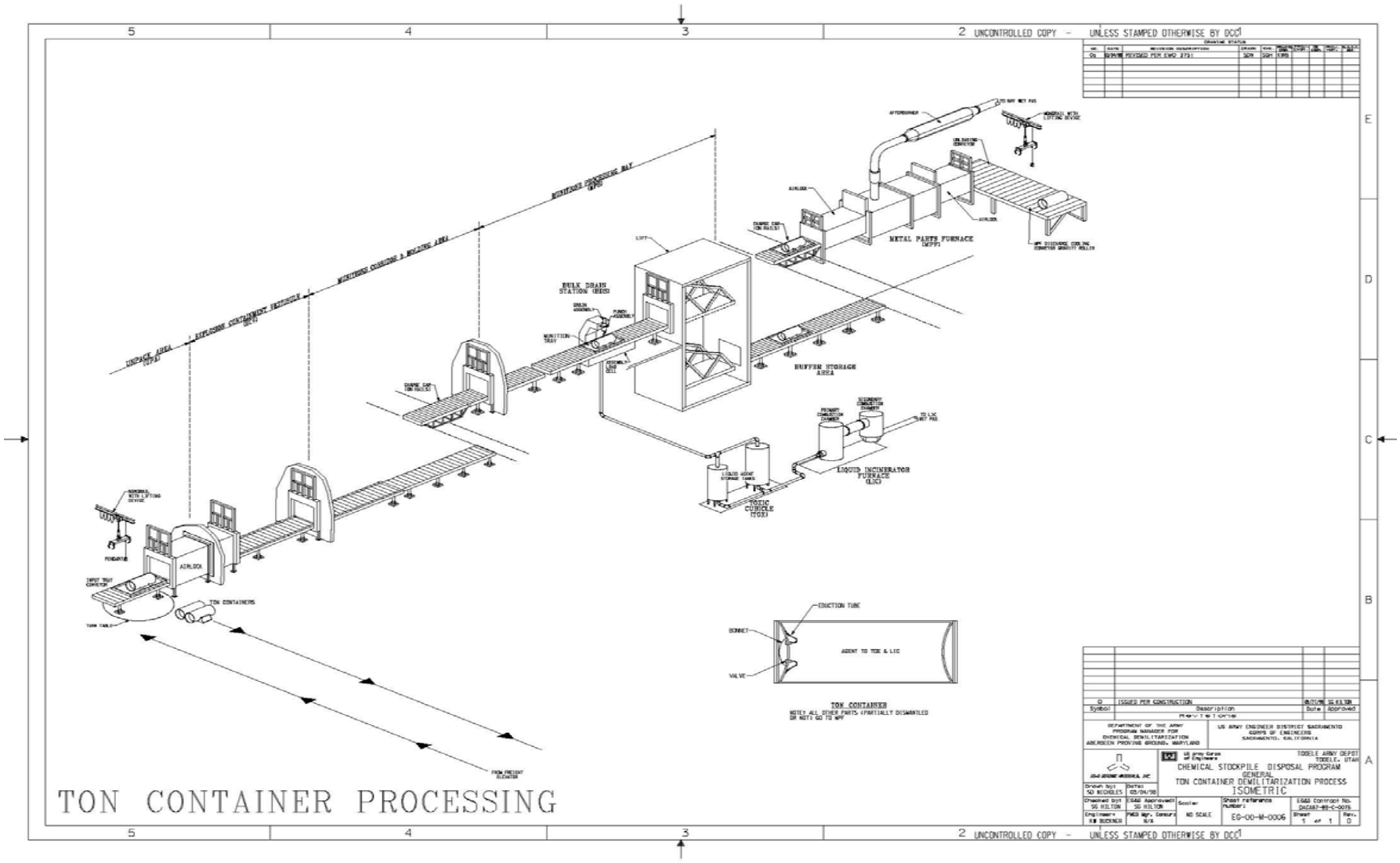
EG-00-M-0003
Projectile/Mortar Demilitarization Process Isometric



EG-00-M-0004
Rocket Demilitarization Process Isometric



EG-00-M-0005
Spray Demilitarization Process Isometric



EG-00-M-0006
Ton Container Demilitarization Process Isometric